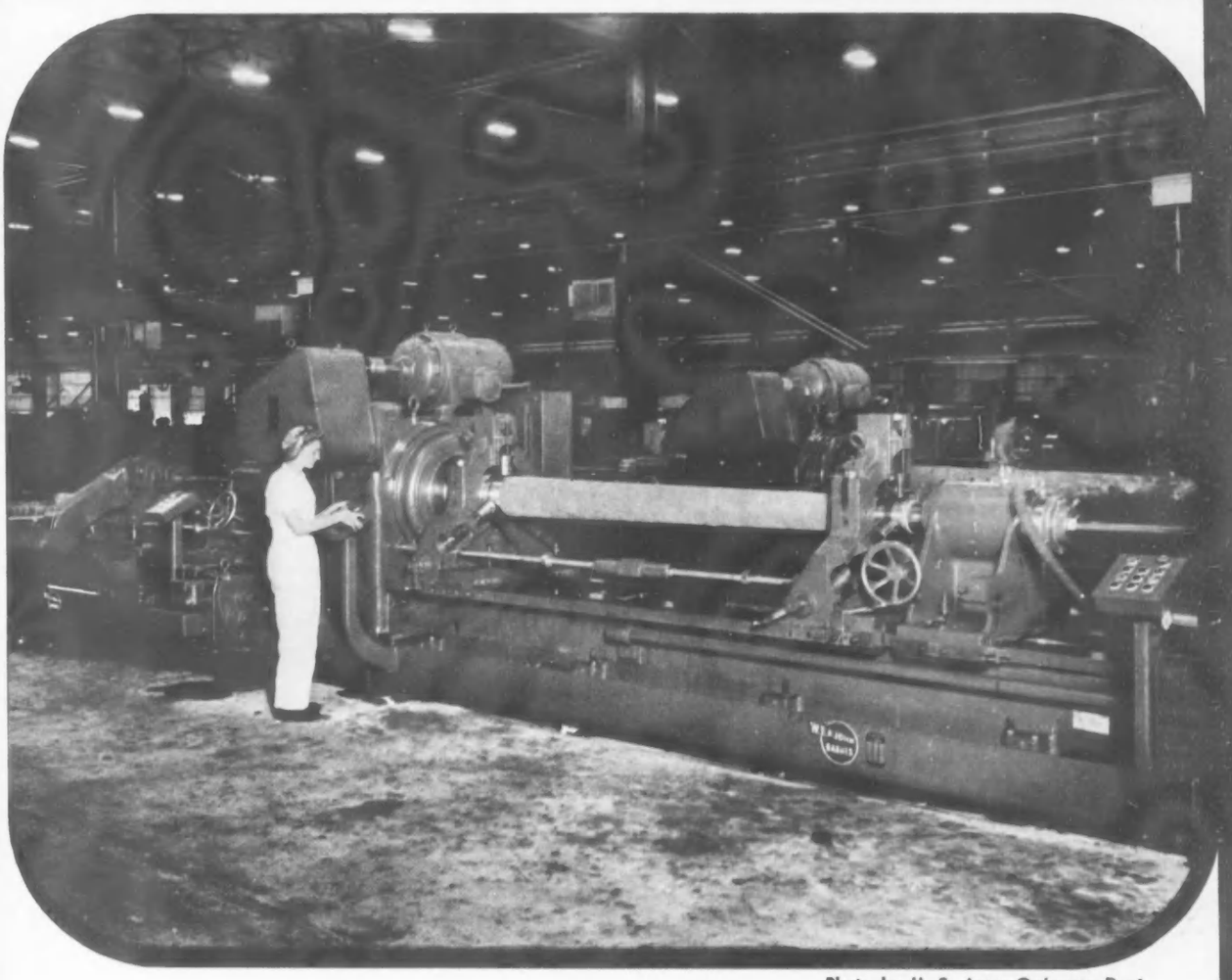
The OIL WEEKLY



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The speed of casting gun barrels by the Army Ordnance Department's centrifugal method sets the tempo for subsequent machining operations.

By this method, molten steel is poured into a cylindrical mold while it spins at high speed in the rotary machine. Centrifugal force holds the metal against the mold, leaving slag concentrated around a small central hole. In the boring operation, this slag is removed in a minimum of time by the huge machine pictured above. Boring the barrel from both ends simultaneously, this machine is capable of turning out a 90-millimeter gun barrel in approximately 2½ hours.

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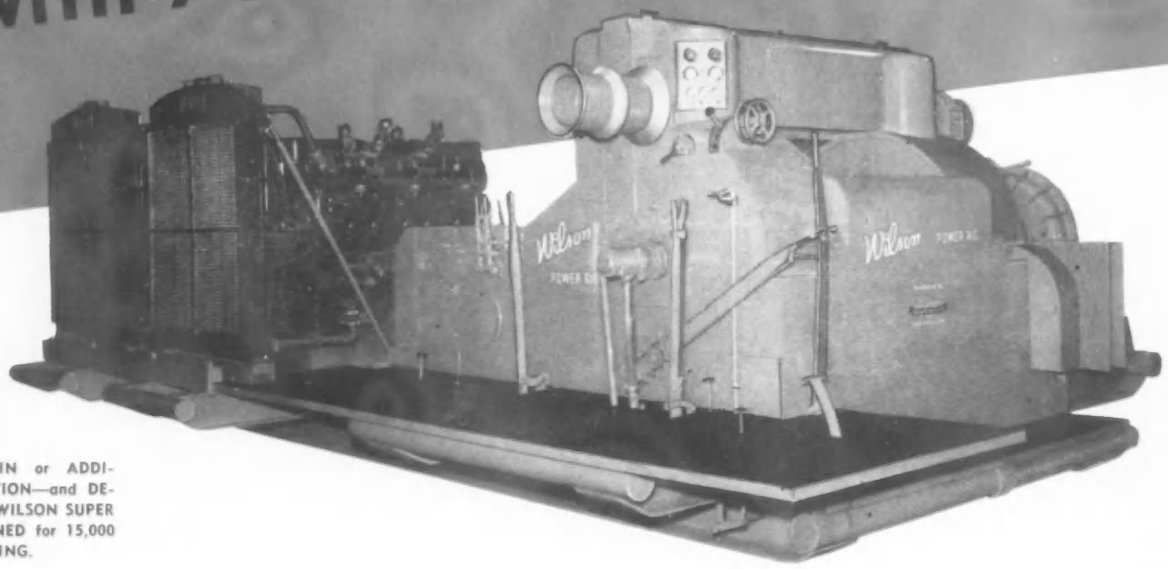

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for the drilling-producing-pipeline industry

PETROLEUM REFINER and The REFINERY CATALOG
for the refining-natural gasoline industry

THE OIL WEEKLY

ENGINEERING • NEWS • STATISTICS

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Contents • November 22, 1943

Volume 111, No. 12

The Changing Panorama.....7

Technical and Feature Section:

Oil's Pattern for War and Peace.....9
By HAROLD L. ICKES

Pictorial Story of Oil-Reserve, Price and Requirement Situation.....12

Mud Acid Treatment Effective in Reworking and Completing Wells.....15
By DON L. CARROLL

A New Application of Water Injection for Maintaining Reservoir Pressure and Increasing Natural Water Drive.....17
By WILLIAM L. HORNER AND D. R. SNOW

The Criteria for Determining an Oil Field's Susceptibility to Secondary Recovery Methods.....23

Practical Operating Hints for the Drilling Rig.....32

More Wildcat Wells Drilled in October but Results Continue Far Below Requirements to Maintain Reserves.....36
By DON L. CARROLL

New Program of Federal Geological Survey Is Streamlined to Needs of Oil Industry.....40
By HUGH D. MISER

News and Departments:

Looking Ahead with the Editor.....5
Washington Roundup.....43
Markets, Statistics and Prices.....47
United States Field Operations.....51
United States Well Completions.....55
United States Wildcat Starts.....60
Squeaks from the Bull Wheel.....61
Notes for the Equipment Buyer and User.....62
Men in the Industry's News.....64
Index to Advertisers.....64

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LOOKING AHEAD
. . . with the Editor

TO THE uninitiated, a pipe line is a pipe line, regardless of the original throughput for which it was laid, and should readily be converted to a carrier for another substance.

That this is far from actuality was demonstrated in the "reconditioning" of a 150-mile gas line for service as an oil carrier. Other than the right-of-way and some of the pipe which stood up well enough to be used again, the project required little less than the building of a new line, and in some ways proved even more time-consuming than the stringing of new pipe.

Such pipe as was usable was reconditioned by being trucked to portable conditioning plants, the schedule being laid out so that each truck, bringing in pipe to be serviced, was loaded with serviceable joints ready for relaying.

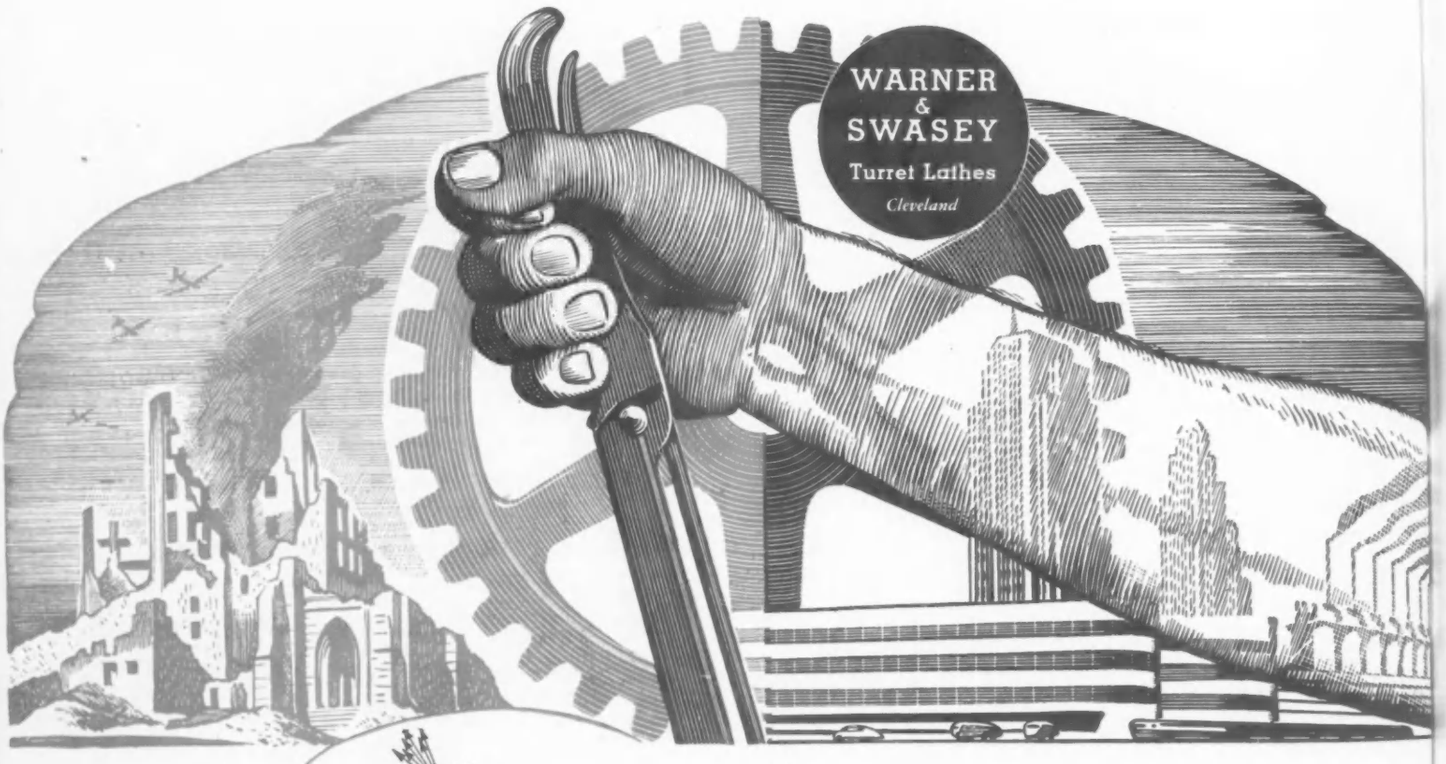
Description of this unusual relaying job, with illustrations showing many of the kinks developed for speeding up the work, will appear in an early issue.

Production that is winning a war will rebuild a better world

AMERICA has built the greatest productive machine for *war* the world has ever seen. Until victory is won it must roll on with undiminished power.

With the coming of peace the ingenuity that developed new techniques, new war products,—the enterprise that built new plants and trained millions of green workers in mechanical skills must not be scrapped along with war machinery. These great productive forces must be converted in full measure to more humane purposes. How quickly this is done will determine how quickly we can put soldiers and ex-war workers to work, turning out the consumer goods so badly needed here and abroad.

Thousands of plants now busy on war goods are using machines which will be obsolete for peacetime competition. Machines are wearing out under continuous operation. Many plants to reconvert will require new production methods, new machines, and tooling. Look well at your plant today, from the viewpoint of tomorrow.



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The Changing Panorama

A Tale of Two Natural Resources

ANYONE interested in such things as extremes and contrasts will find plenty to occupy his mind by contemplating the opposite situations of the coal and petroleum industries. It seems hard to believe that in time of war the exploitation of the two greatest and most vital natural resources in the United States should be marked, on the one hand by an unbroken record of accomplishment and patriotic cooperation, and on the other by a record of frequent, disastrous interruptions of production, disunity of effort and blind jockeying for advantage of such magnitude that not only is the war effort sabotaged, but the conception and methods of the country's democratic government are put on trial.

(As has been since the Prodigal Son, coal prices are being increased by OPA; but well-behaved oil must "hold the line").

The coal industry already is calling for the formulation of a long-range national fuel policy for the most efficient utilization of coal, petroleum and natural gas during the post-war period. This is a sound proposal, and is, on its face, undoubtedly in the public interest. But coming from the coal industry, with a record through the years that is as black as its product and that is characterized by its failure to handle its own affairs, the proposal carries the tinge of desperation and fear of the consequences of scandalous dereliction of duty. It sounds like a confession of inability to face the future with self respect and confidence, and a hope that its more stable kid brother will rescue it from the mess that it has created all by itself. Furthermore, the national fuel policy suggested by the coal industry is based on the assumption that America's oil and natural gas resources are to be depleted in a few years, and that those who use oil and gas for heating purposes should be forced to turn to the use of coal now as a matter of national welfare. Consequently, coal's announced policy of aiding the nation's welfare smacks of selfishness of the first class.

Leaders in the coal industry may plead with some justification that organized labor and a labor-loving government are largely responsible for the "chaos of coal"; but how does it happen that the petroleum industry is so notably free from such troubles? Is it coincidence that labor problems of magnitude have never existed in the oil business? Certainly, there are more fundamental reasons for this difference. No doubt it is the fact that oil's management has faced reality realistically, and has had a better appreciation of its labor.

Did Ickes Mean All He Said?

WHILE Administrator Ickes assured the industry in his address before the American Petroleum Institute annual meeting in Chicago that oil would be returned to its full competitive enterprise standing at the close of the war, there are many who did not find his words too encouraging on this subject.

A disturbing thought resulted from the way he worded one of his assurances that free enterprise would prevail after the war. "When the emergency has ended, if I have any authority in the matter," Ickes said, "you will find me on your side working to restore the oil industry, so far as possible, to its ante bellum competitive status just as speedily as it can be accomplished."

It was the phrase "so far as possible" that caused some to feel he had not given full assurance, and had left himself a wide opening. "What does he mean by this qualifying phrase?" was the question many were asking. Such conditions as a shortage of oil, for instance, it was said might make it possible in Ickes' estimate to free oil from government control.

Higher Priorities For Grain Rubber

SUCCESS of the Congressional farm bloc in pushing its campaign to make butadiene from grain was disclosed recently when Rubber Director Bradley Dewey released his latest progress report. The new report showed that 87 percent of the alcohol plants have been completed against only 39 percent of those producing butadiene from oil.

Under pressure from the agricultural interests, despite the fact that grain-based butadiene can compete with the petroleum product only when the price of grain is at depression levels, 96 percent of the alcohol plants received the highest priorities while only 40 percent of the petroleum plants had that advantage.

Deep in the Heart of Taxes

THE government can no longer placate and reprimand the American taxpayer by the old dodge of using the rubber stamp argument that our taxes are nothing compared with those of the poor, patient English people. Our federal, state and local taxes for 1943 will aggregate more than 49 billion dollars. On a per-capita basis this amounts to 357 dollars for every man, woman and child in the country, as against 291 dollars in Great Britain and 261 dollars in Canada. These figures are official—released by Randolph Paul, General counsel for the Treasury Department, in a report to the House Ways and Means Committee.

Federal apologists can be expected to belittle the obvious implications of our top rank as taxpayers. They will probably cite comparative economic conditions in the respective countries, standards of living, income distributions, purchasing powers of the different currencies, and other factors that suggest themselves as quotable contrasts; but when the separate national tax bills are compared in terms of the American dollar we find that American taxpayers are digging down deepest, and that reduces the argument to common sense language. In other words, the money factor is reduced to the lowest common stenographer.

Meager Knowledge Often Dangerous

THE meager knowledge possessed by some of the "hot-shot" dopesters who clutter up the air waves and newspaper syndicate columns is demonstrated by the statement of a certain nationally known Washington reporter that the discovery of oil in Florida has solved the problem of supplying oil to the Eastern Seaboard. A little knowledge is a dangerous thing in the hands of a widely-read moulder of public opinion. One costly but piddling low-gravity oil well is a far cry from an East Texas bonanza; and even if sizeable reserves are actually outlined in the Everglades, a lot of time, effort, drill bits and casing will be used in the process.

Certainly, no well-informed person is going to crawl so far out on the limb as to recommend that we take hypo-

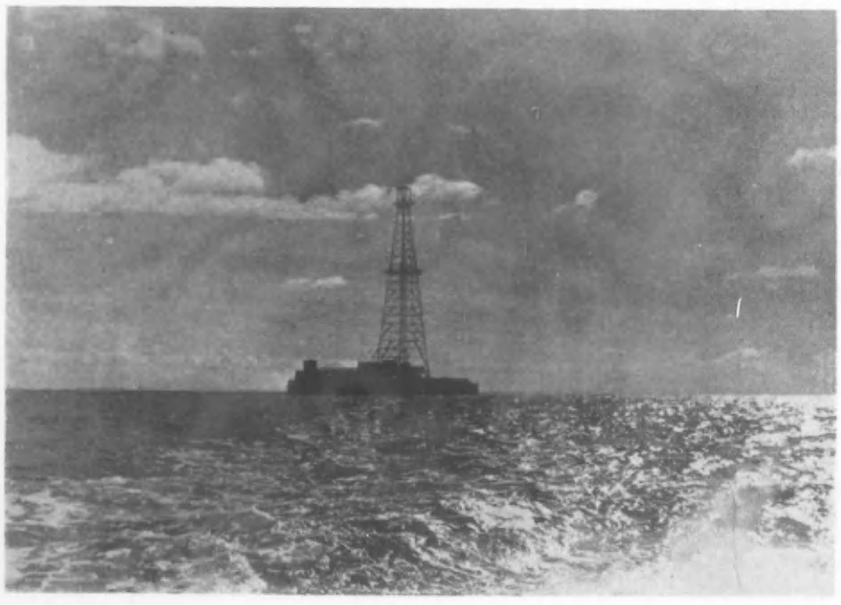
thetical reserves for granted and change our defense transportation plans accordingly. To most of those who read this paragraph such a possibility will appear ridiculous, of course; but stranger things have happened in the halls of Congress, and the influence of some politico-ecnomic writers on the electorate and the elected alike is often profound, even when their opinions are utterly silly. Too many people believe what they wish to believe, and prefer to have others do their thinking for them. To such people, one well is as good as a thousand, and Central Florida as well situated as if it were in the New York City area.

Who Will Win The Final Battle?

WHILE the pressure of inadequate oil supplies tightens perceptibly with each passing week, some people still remain unconvinced that all the talk about a shortage is not more than that —just talk. This belief stems from an authoritative source: Washington itself, where one federal agency proves with facts and figures that the situation is as the industry describes it, and another set of officials having checkmating powers deny that a shortage prevails or is even imminent, passing off cries for relief with a shrug indicative of tolerant unbelief.

This lack of official unanimity throws all the load of public and legislative persuasion on the shoulders of the industry, and makes the job just that much more difficult all around. The petroleum industry is not likely to forget in the years ahead that it devoted two years (and perhaps more) to a knock-down, drag-out battle to secure a most necessary readjustment of basic oil prices, without getting it. Through an arbitrary stand, oil has lost the decision, but may yet win the final battle.

An increasing number of people are turning a questioning eye on Washington bureaus. No longer are their propaganda being swallowed "hook, line and sinker." The people want to support the war effort in every sensible way and have, and will continue to do so until victory is won. But reservations are already being made in the minds of many on just how much that goes on in Washington is essential to winning the war, and how much is entirely beside the point. This is true of not only oil, but other groups that have encountered similar treatment. High-riding, dogmatic, take-it-or-leave-it, attitudes of some agencies and some administration officials are creating much of this reaction. At the top of this list is OPA. People are thinking more seriously about governmental affairs than they have in a long time. The day of reckoning will come as surely as fate, and a continuation of this attitude will bring it that much more quickly.



In the far flung search for new oil reserves, Cities Service Company and Socony Vacuum Oil Company are drilling this test in Hillsborough Bay, Gulf of St. Lawrence. It is eight miles south of Charlottetown, Prince Edward Island. Finding of commercial production in this part of eastern Canada would be of vital importance because of its strategic location.

A heavy-duty drilling rig has been erected by Loffland Brothers, drilling contractors. It was necessary to erect a drilling "island" or foundation in open water having a depth of 16 feet at lowest tide and 26 feet at high tide, where wave, tide and ice problems must be met. The foundation is of log crib construction, filled with some 8000 tons of rock and concrete, and has a surface area of 9000 square feet.

Old Barney Takes Over Again

THE mere announcement that Bernard M. Baruch has been appointed to untangle the snarl of renegotiated war contracts, is the best assurance to both industry and government that common sense and quick action will prevail from now on out. After only a few days cogitation on a park bench, this No. 1 trouble-shooter came up with the right answer in the rubber crisis, and it can be taken for granted that no time will be wasted in the initiation of a speedy and fair system of dealing with war contract settlements.

If Baruch is given any authority at all there will be no more bickering between the armed services and the comptroller over the carcasses of liquidated business firms that have been throttled without warning and without remuneration of invested funds. The whole process of contracting, procuring, revision, renegotiation, cancellation and settlement belongs on a single flow-sheet; and that is how it will certainly be laid out by "Old Barney". The job has found the right man. It may very well be that he will have things functioning smoothly in record time and be available for cleaning up some other wartime mess—the petroleum situation, for instance.

"Pep" Talk For Refinery Workers

FORTY-FOUR thousand workers engaged in the construction of forty 100-octane refineries this week are receiving individual letters from Administrator Ickes, congratulating them on the work they are doing and asking them to keep on the job so the plants may be put into operation quickly.

Ickes "pep talk" was issued as part of a program to overcome labor difficulties which are being encountered in the refinery construction program. In his letter, he pointed out that the air force is depending upon the construction workers for the gasoline they will need this winter "to complete their part of the job of blasting Germany and Japan into complete and final defeat."

The peak of 44,000 skilled workers which is being approached is more than half as many workers as are required to run the more than 500 refineries now operating, it was pointed out.

Oil's Pattern for War And Peace

By HAROLD L. ICKES, Petroleum Administrator for War

Before the Annual Meeting of the American Petroleum Institute, Chicago, November 11, 1943

When the emergency has ended, I will work to restore oil to its competitive status, so far as it may be possible. . . . Price decision highly disappointing. Obviously next step is to attempt to invent some incentive program. . . . Activities planned so oil fields of other lands can contribute their share, because I don't want to see American oil industry wear itself out and slash years from its life by wartime burst of inefficiently excessive production.

QUITE naturally, the first problem that confronted me after I had accepted the invitation to come here was deciding what I should talk about. In the course of my pondering, it occurred to me that I undoubtedly could make you happiest if, instead of talking at all, I would borrow an idea frrom the burlesque shows and put on a little skit. I could begin by taking all of the orders and directives that the Petroleum Administration has ever issued, and pretend that each was an item of ladies' clothing; and then, in the manner of Gypsy Rose Lee, I could—one by one—discard them forever.

Before someone shouts, "go ahead and do it," I would like to get it on the record that we in PAW wish as earnestly as anyone of you that these orders and directives might be terminated as of this afternoon. I will speak more to that point a little later.

In my remarks by proxy last year, to which Mr. W. Alton Jones undoubtedly gave far greater forensic finesse than I could myself have given, I reviewed in some detail the history of the wartime oil operation up to that time, as conducted cooperatively by the industry and the Petroleum Administration. Now that another year has passed, thus providing us with an additional sample of time to examine, it seemed to me that we might well consider the shape, as well as the detail, of this wartime oil operation. In other words, taking all of the pieces and fitting them together, what pattern do we find? What, if any, trends are indicated? What policies are exemplified? What purposes are demonstrated?

Principal Policies

I have made such a diagnosis, and I find that there runs through the entire case history, one all-important, all dominating purpose: the supplying of petroleum products of the kinds needed, in the amounts needed, at the places needed and at the times needed to win the war.

What, then, of the policies through which we have sought to achieve that purpose? In my own review of that record, I found the principal policies to be these:

First—To enlist a staff of minimum size but maximum competency—men who knew oil.

Second—To rely upon the industry, so far as possible, to do what needs to be done to accomplish the job, with only a necessary minimum of control and direction from Washington.

Third—So to operate that, so far as possible and practical, no act or omission of ours should permit any company or part of the industry to use the war to take advantage of or profit at the expense of others in the industry.

Fourth—To select members of our industry committees on a basis of keeping a fair balance as between all elements of the industry, particularly as between large and small companies.

Fifth—To find, produce, refine, transport and distribute the greatest possible amount of petroleum and its products in the light of recognized conservation principles and subject to the unavoidable disturbances of war.

Sixth—To help the industry to obtain the materials, the manpower and the money that it needed to do its war job most effectively.

Seventh—To impose restrictions only when the physical facts made them necessary and unavoidable.

I repeat that these have been the principal policies that I find exemplified by the record, and the reason why I repeat is that there have been suggestions here and there that we have not faithfully adhered to these policies, but have merely paid them lip service. This criterion does not apply to all the points that I have mentioned. I don't believe that anybody will argue with me about the competency of the staff; and most of you—although not all—will agree that we have tried to keep our orders at a minimum and rely rather,

upon a cooperative process. It is when we get into the matter of the balance between different interests in the industry that we run into some allegations that have made it difficult for me to maintain my customarily sweet disposition.

Independents Vs. Majors

It was way back before we got into the war—on June 19, 1941—that I had my first meeting with representatives of the industry. There were 560 oil men present. They came from all parts of the country, and they represented every phase of the industry. It was at this meeting that I called upon the industry to let us have nominations for our proposed district committees. I said at that time—I quote: "The personnel of each of these committees . . . should of course be representative of the many different units in the industry and balanced between independent and so-called major companies." On that basis, nominations were requested. On that basis, appointments were made, although, quite frankly, there are occasions when I am still more than a little perplexed when I try to figure out what is a major company and what is an independent.

In any event, subject to the difficulties of precise definition, we did conscientiously attempt to strike a balance on these committees.

Yet it is brought to my attention every now and then that someone has been burping that PAW is "dominated by the majors," or that PAW "lacks sympathy for the independents."

Now, if anything were needed to make this kind of thing more stupid than it is naturally, it is the fact that, all of my life, I have been motivated by the fervent desire to protect the rights of the independent businessman. Indeed, I have been so active and outspoken in that regard that I have on occasion been accused of being "anti-big business." Well, it so happens that I am not a foe of big business, so long as it is honest and so long as it is not monopolistic. However, I never expected to live to see the day when I would be randed as "anti-little business." My reaction when I first began hearing of this rumor-mongering was to ignore it as unworthy of attention, but it is apparent that a systematic campaign is under way, and so I choose to bring it out into the open.

Yes, we have men from major oil companies on our staff. Mr. Davies is from a major oil company. Some of the division directors are from major oil companies. And I have no hesitancy in telling you that I have been very happy to have them. Far from attempting to use their positions to trample upon the independents, they have—judging from the evidence that I have seen—been scrupulous in leaning in just the opposite direction.

As to our industry committees, I have said that our aim has been to strike a balance as between independents and majors. Certainly, regardless of whatever dispute there may be as to whether this or that committee member is or is not a bona fide independent, I do not know of any committee which does not have independent representation. So, if the independents on any committee should at any time decide that the cards are stacked against them, I would think that they would so report to us, either directly, or through the Petroleum Industry War Council. After all, one of the principal purposes in creating the committees and the War Council was to give every element of the industry a voice. There are two ways in which that voice can be used: It can be used with the desired loudness in the committees, in the War Council, and to me, or it can be used in a whisper on Capitol Hill in an attempt to stir up political fires. Frankly, I would suggest that one of the first methods would be more productive, especially if there be a just grievance.

Year's Accomplishments

Turning now from the general to the specific, I think that there may be an interest in a few of the things that have happened since your last meeting. If I were asked to name the highlights of the year, I would certainly include these:

First—The solution of the oil transportation problem.

Second—The achievement of more than four times the production of 100-octane aviation gasoline than we had in January, 1942. Incidentally, the figure will be more than eight times before many more months.

And, in passing, perhaps you will forgive me if I admit a sense of satisfaction because of the completion of the "Big Inch" pipe-line, the long ridiculed "Ickes' pipe dream" which is now close to its capacity delivery of 300,000 barrels of crude oil into the New York-Philadelphia area.

The "Big Inch" and its 20-inch companion, "Big Inch, Junior" are the lines which have been getting most of the publicity, but I suspect that even some of you gentlemen are not aware that there are 16 other projects in the pipe line program which PAW and the industry have carried forward together. When they are all operating at capacity, they will be delivering a total of 725,000 barrels of oil into the East Coast every day—more than half of the volume of oil which the East received in peacetime by tanker.

The progress in 100-octane production is no less astounding than that which has been wrought in transportation. The details have been told before and I shall not repeat them. I think that there again there is significance in the fact that the job has been done by Government and industry on a cooperative basis, within the framework of free enterprise.

Price Decision Reaction

But all the developments of the last year have not been pleasant ones, and in saying this, I am thinking of the shortage of crude oil. It is purely academic to say that this shortage could have been prevented or alleviated if a higher price ceiling had been permitted. We have to face the fact that a higher price was not permitted. PAW thought that a price increase should be granted. We said that we believed that it would stimulate exploration, that it would make possible more extensive employment of secondary recovery methods, and that it would enable many marginal locations to be drilled and more stripper wells to continue their operation. That is why we recommended a price increase to OPA. That is why we asked OPA to reconsider our recommendation after we were turned down the first time. And that is why, after the second turndown, we appealed to the Director of Economic Stabilization.

His verdict was no less disappointing to us than it was to you, but it is nevertheless, the verdict.

Whatever may be the final means of stimulating the discovery, development and production of additional crude oil reserves, Judge Vinson has now advised the Petroleum Administration and the industry, through the Petroleum Industry War Council, to attempt to devise some plan, short of a general price increase, which will provide additional financial incentives for the achievement of these ends.

Incentive Plans

Obviously, an attempt to invent some such plan or program is the next step. In his opinion Judge Vinson said that he: "entertains no doubt whatsoever of the ability of the PAW, in cooperation with the Petroleum Industry War Council, to devise a practical, workable program for giving additional financial support to exploratory activity and development of new fields without increasing the cost of living, burdening Government or business with an impossible administrative task, or dispensing public funds to those not engaged in exploratory activity or development of new fields."

However thus far we have been unable to formulate such a plan. But, in view of Judge Vinson's request that we discover some new formula short of a general price increase, I have asked

my staff, and I now urge the industry, to undertake immediately to try to formulate some program or policy, other than a general price increase — one which we can conscientiously recommend to Judge Vinson as practical, workable and administratively feasible.

Above all, I am unwilling, in view of our need of additional reserves, to allow this question of proper financial incentives for producers to remain unsolved. Therefore, it is necessary that we proceed in good faith and with all possible speed. This, as I have said, is the next step. Only after we have attempted to devise such a program as has been requested can we in PAW determine what the steps thereafter shall be.

Foreign Oil

Now, this leads inevitably to the question of foreign oil—a question which has stimulated such heated controversy that I consider it essential that I discuss it as fully as may be, and make my position clear. There are both major and independent operators here today, and I address myself to both groups.

The subject of foreign oil has always been one that has aroused the particular interest of the independent producers, and quite understandably so because it has appeared to them to be a potential threat to their livelihood. Most of these independents are non-integrated operators, and so any losses which they might incur through the competition of lower-priced foreign crude could not be offset by gains in their other operations. Therefore, they are opposed to a large-scale importation of oil for the reason that it might displace their domestic production. As I say, I well understand this viewpoint.

In fact, before I go ahead, I think that I might quote from an address which I made to the Independent Petroleum Association of America a year ago. I said: "Especially do I want you to know that I realize the importance of the independent producers, both in peace and in war. The very term, 'independent,' seems, somehow symbolic of the American birthright of free opportunity . . . We must always have the independents—the 'little fellows'—in all lines of endeavor in this country of ours. Without them, something would go out of the bone and fibre of America."

Let that position, then be stipulated for the record.

The fact remains that the demand for oil for war is increasing. The fact remains that the only place in the United States were crude oil production can be increased substantially from known reserves is in West Texas.

And, there is more to the situation even than the necessity of supplying the requirements of war. There is the consideration of what our position is to be after the war. I want to see the American petroleum industry live and prosper for many years to come. I don't want to see it wear itself out and slash years from its life by a wartime burst of inefficiently excessive production that would injure our oil fields irreparably. It is for this reason that we have long planned our activities so that, as conditions make it possible, the oil fields of other lands would contribute their share to the United Nations' needs. It is for this reason, and not for the purpose of slipping in—under the guise of wartime necessity—a wedge that would threaten our domestic producers when peace comes.

Reserves Corporation

With respect to the Petroleum Reserves Corporation, there seems to have been a great deal of misguided and inaccurate speculation as to its purposes and future course of conduct. Actually, there is no occasion for the type of rumors which have come to my ears. Petroleum Reserves Corporation is in no sense the first, although so far as I know it was the latest of the governmental corporations which the war has compelled us to create to meet our national needs for critical materials.

In order to protect business here in the United States, to assure the American people of enough oil to meet their needs, and to make certain that there is sufficient oil for military requirements, it is necessary that the United States obtain a fair measure of access to foreign oil resources. We will be able to make available within our present reserves enough oil to finish this global war, but we couldn't possibly oil another war of this size. In view of this fact we would be remiss in our duty and indifferent about the future of our country if we did not adopt measures to assure ourselves of enough oil in the event of another world war. We hope that there will not be such a war, but we would do well to remember the old adage: "Soft words butter no parsnips."

At the present time, there is no international arrangement which adequately carries out the principles of the Atlantic Charter so as to guarantee to the nations of the world fair access to the world's oil resources. It is hoped that some such agreement will be forthcoming. A program of this sort would contribute greatly to the peace and security of all nations.

In the past, a number of United States oil companies have established themselves in the foreign oil business. They have obtained rights to oil reserves, they have constructed facilities to process and transport oil, and they have engaged in world-wide distribution of oil and its products. This has been done entirely as a result of private initiative with the government extending its good offices. On the other hand, the principal nations of the world—or most of them—have conducted their foreign oil business through corporations or agencies which are entirely or partly owned or in effect controlled by the government itself. The United States is one of the few major countries which has not participated in foreign oil activities through governmental financing or direction.

To the extent that private capital and private initiative are unable to establish and maintain a national position in this field, government assistance and participation may be necessary. The Petroleum Reserves Corporation is available for these purposes whenever and wherever necessary. The Directors of the Corporation are the Secretaries of State, War, Navy and Interior, and the Administrator of the Foreign Economic Administration.

Directive No. 70

With respect to another phase of foreign oil, there has also been some indiscriminate shooting. It has been aimed at our Directive No. 70, which was issued to make possible the same kind of joint use of facilities and products in foreign operations as we have employed to meet war-created shortages of supplies and facilities at home.

The allegation is that Directive No. 70 constitutes a "cartel"—oh, even worse than that, a cartel cooked up by the Government, itself.

I am not going to quarrel over the definition of "cartel." But I am going to say quite assertively that Directive No. 70 is nothing of the sort.

It calls for a pooling of products and facilities, at the direction of the Petroleum Administrator for War, for the duration of the war. It has nothing to do with prices, it does not limit spheres of operation, and since it is a governmental design in order to facilitate the distribution of supplies to the armed forces, not only with the knowledge and consent of the government but at its direction, it cannot by the widest stretch of the imagination, be called a cartel.

However, excitable men both in and out of Congress, and both in and out of newspapers, must have something for the consumption of headline readers. Apparently they do not know that we have had the same sort of arrangement in operation in the domestic field for many months, with the result that we have been able to supply our armed forces much more smoothly and quickly than would otherwise have been the case. Without the pooling of supplies and facilities which Directive 70 makes

• CONTINUED ON PAGE 16

Pictorial Story of Oil-Reserve,

AT THE last hearing before the House oil subcommittee, November 4, Deputy Petroleum Administrator for War, Ralph K. Davies, presented a graphic picture of the oil industry through a set of charts reproduced on this and the two following pages. These charts present a simplified graphic picture of the oil price, reserve and supply situation.

Prefacing the charts, PAW pointed out:

That crude oil requirements for United States refineries for military and essential civilian use are at record levels and are increasing steadily under further impact of war requirements.

That domestic crude production has been substantially exceeding discoveries of new crude oil reserves since 1938, and as a result, United States producing capacity has been declining steadily and is no longer sufficient to meet future minimum requirements.

That in order to reverse the declining trend in new reserve discoveries and thereby provide a safe margin of domestic productive capacity, the economic health of the domestic industry must be improved through a price increase.

Higher crude prices are necessary because costs of finding oil have quadrupled since the middle 1930's, while production costs have also gone up substantially. Financial means must be provided through a price increase for expansion of exploration activities and for enlarged secondary recovery operations, for rehabilitation work and to prevent premature abandonment of stripper wells. Only in this way can a safe margin of domestic oil productive capacity be provided. Because the 35-cent per barrel proposed increase is so small, PAW asserted none of the industry's customers would be injured.

Chart 1—Annual Discoveries of New Crude Oil Reserves in the United States

The chief significance of this graph is the sharp decline in the discovery of new reserves that has taken place since 1938.

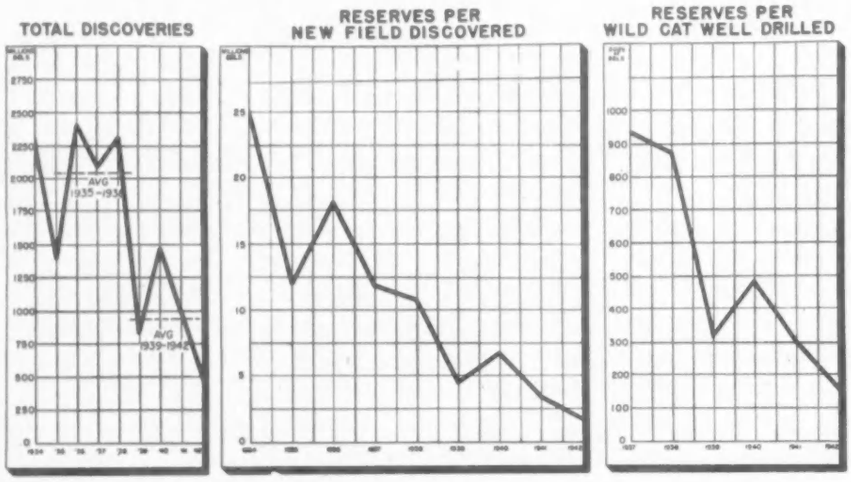
The first panel (total discoveries) shows that fewer barrels of oil are being found per year.

1. During the four years ended December 31, 1938, new reserve discoveries averaged 2041 million barrels annually.

2. During the four years ended December 31, 1942, new reserve discoveries average but 941 million barrels annually, or a drop of 1100 million barrels annually when compared with the preceding four years.

3. During the four years ended December 31, 1938, new reserve discoveries exceeded average annual production by 894 million barrels annually, but during the four years ended December 31, 1942, average annual production exceeded new reserve discoveries by 410 million barrels per year.

4. The declining trend in new reserve discoveries is further indicated by the fact that new reserve discoveries during the year ended December 31, 1942, totaled only 507 million barrels, by far the lowest figure during the 9 year period indicated in the panel.



The second panel (reserves found per new field discovered) shows that it is necessary to discover more and more new fields to reverse the declining trend in new reserve discoveries, for the quality of new fields discovered has been declining steadily.

1. There were 90 new fields found in 1934 and discoveries for each new field averaged 24,750,000 barrels.

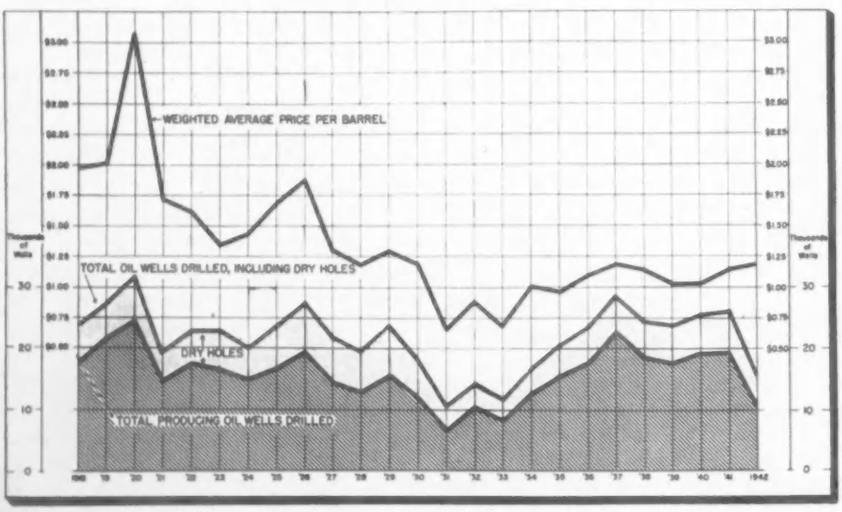
2. There were 308 new fields found in 1942, but an average of only 1,650,000 barrels were found in these fields.

3. Thus the 90 fields found in 1934 discovered a total of 2250 million barrels annually, while the 308 fields found in 1942 discovered but 507 million barrels.

The third panel (reserves per wildcat well drilled) shows that the amount of oil discovered per wildcat drilled also is declining steadily and rapidly. Therefore, it is becoming necessary to drill more and more wildcat wells in order to reverse the present decline in new reserve discoveries.

1. The 2224 wildcats drilled in 1937 resulted in the discovery of 934,000 barrels per wildcat well, but the 3219 wildcat wells drilled in 1942 found an average of only 158,000 barrels each.

Chart 2—United States Crude Oil Prices Compared With Oil Well Drilling Activity


WEIGHTED AVERAGE PRICE PER BARREL
TOTAL OIL WELLS DRILLED, INCLUDING DRY HOLES
DRY HOLES
TOTAL PRODUCING OIL WELLS DRILLED

An increase in crude oil prices is necessary to increase the rate of drilling activity, especially of exploratory wells.

1. The number of producing oil wells drilled increases when crude prices go up and decreases when crude prices go down.

2. The drilling of dry holes, which is another rough gauge of exploratory activity, increases when crude prices go up and decreases when crude prices go down.

3. Past peaks in drilling activity have coincided with peaks in crude oil prices.

4. Sufficient materials and manpower will be available to permit increased prices to perform their historic function of expanding drilling activity.

Price and Requirement Situation

Chart 3—Price of Crude Oil Vs. Change in Number of Oil Wells in Operation

Recommended price advance will cause many presently shut-in wells to be placed back in production and will retard the rate at which other wells are abandoned.

1. Declines in crude oil prices cause wells to be taken out of production.
2. Increases in crude oil prices cause wells to be put back into production.
3. Sufficient materials and manpower will be available to permit operators to put wells back into operation at higher crude oil prices.

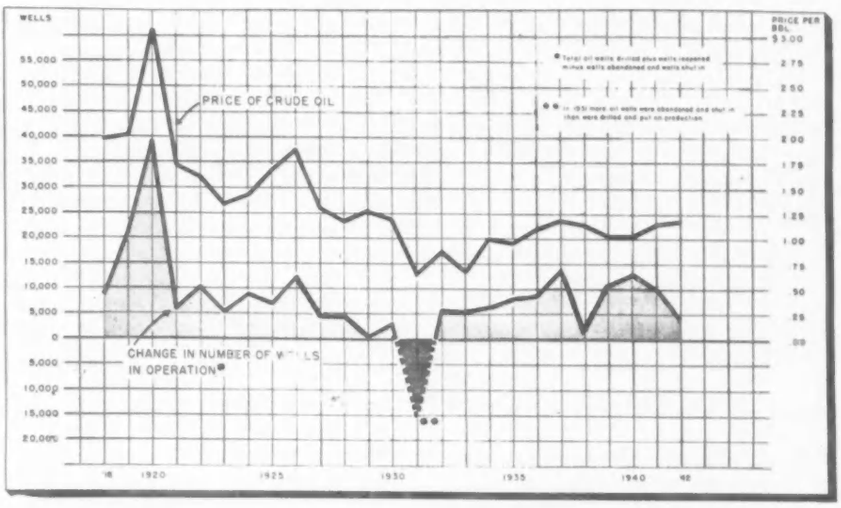


Chart 4—Crude Oil Price Index Compared to Index of Raw Material Prices

If crude oil prices had shown the same percentage increase as all raw material prices between June 1941 and September 1943, crude oil prices would have increased to about $1.49 per barrel by September 1943. This is without regard to whether crude oil prices were frozen in June 1941 in the proper relationship to the general price structure.

1. In June 1941, when crude oil prices were unofficially frozen, the crude oil price index was reported at 58.9.
2. In June 1941, the index of all raw material prices was reported at 83.6.
3. In September 1943, the index of raw material prices was reported at 112.4.
4. In September 1943, the index of crude oil prices was still reported at 58.9.
5. All raw material prices increased 35 percent from June 1941 to September 1943, while crude oil prices remained stationary.

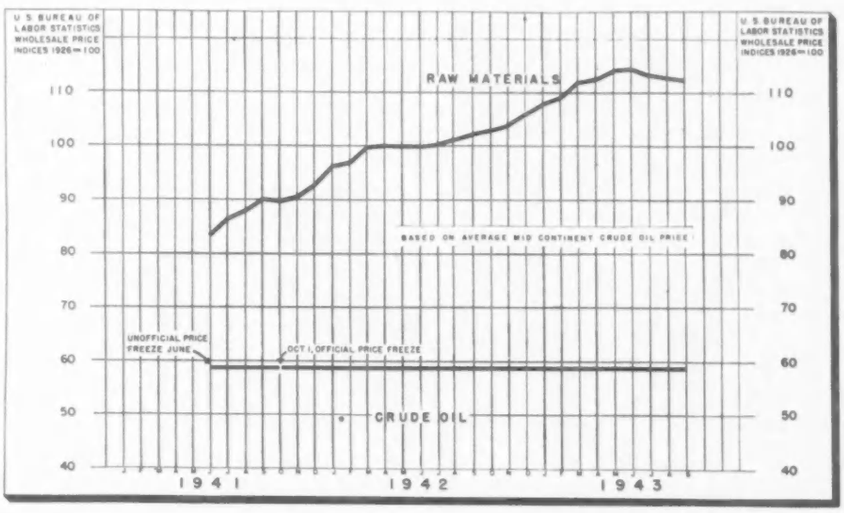


Chart 5—U. S. Expenditures for Exploration Per Barrel of New Reserves Found

The oil operator is in the position of a merchant selling a low cost item off his shelves at a profit, but forced to replace it with a high cost item on which he will not be able to show a profit at present frozen price levels. Although he is presently showing profits, he is doing so at the cost of liquidating his assets.

1. Finding costs have increased sharply since the middle 30's largely because of the decline in reserve discoveries per wildcat well drilled, but also because of the increased cost of geophysical and geological work and the increased cost of drilling.
2. The cost of replacing the crude oil currently being produced has increased sharply. A large part of present production is coming from fields discovered in a period when finding costs averaged 12 to 15 cents per barrel. If producers cannot afford to replace the crude oil currently being produced, the net balance of crude oil reserves will continue to decline.
3. The present frozen crude oil price structure was geared to a finding cost figure of around 12 to 15 cents per barrel. It must now be geared to the higher finding cost figure of 50 to 60 cents per barrel. A price increase is necessary for this purpose.

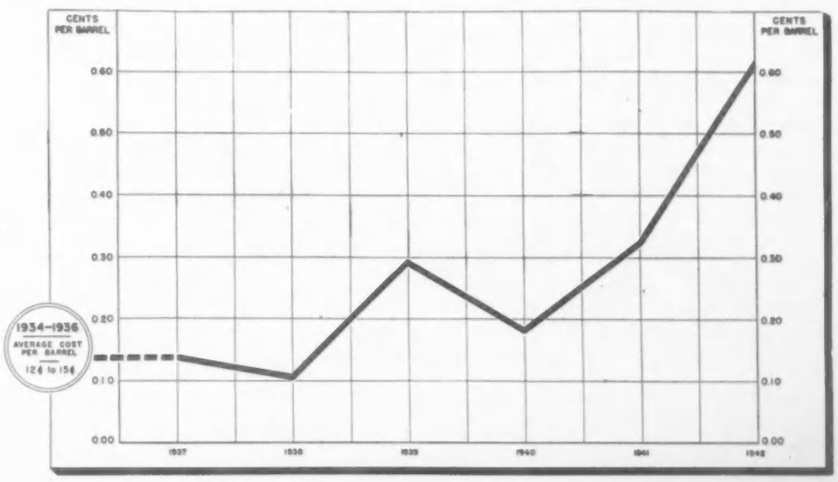
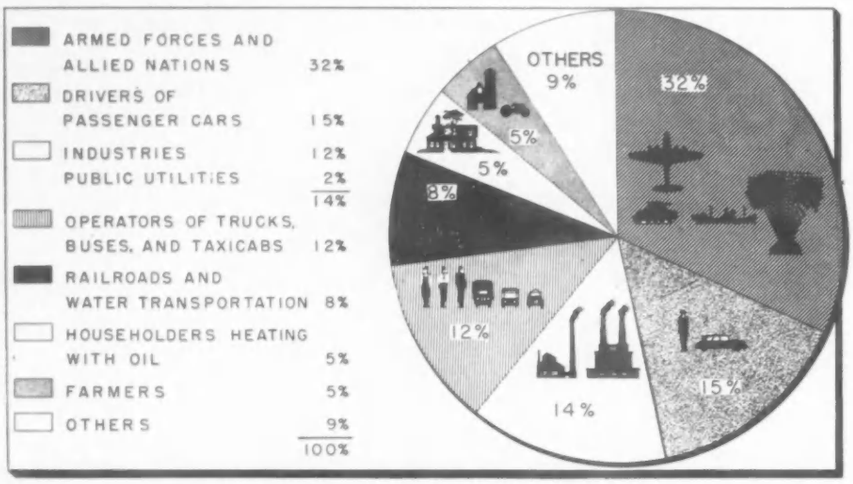


Chart 6—Who Would Bear Proposed Price Increase

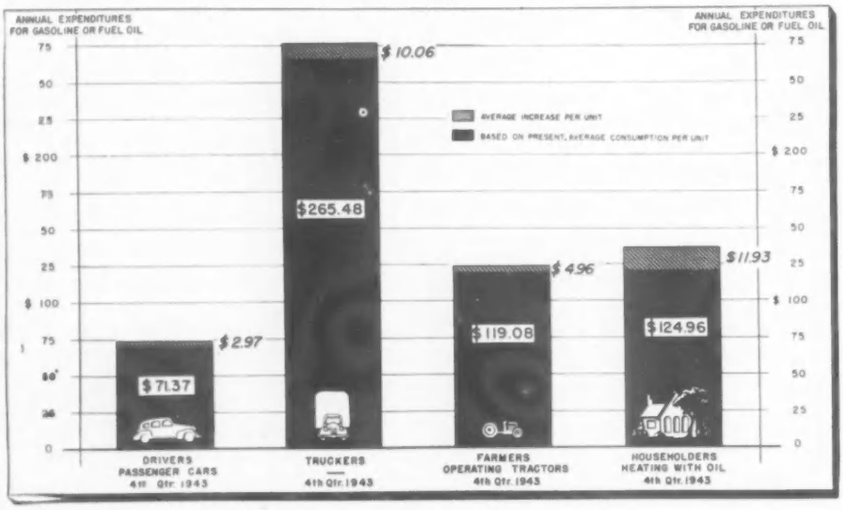
The amount of the price increase that will be borne by the public is relatively small for any single class of consumer.



1. PAW estimates total annual cost of recommended crude price advance, based on third quarter 1943 consumption, at about $500 million.
2. OPA has estimated annual cost of price advance at $552 million.
3. In its estimate of the cost of crude price advance, OPA has failed to consider that a portion of the crude run by the refiner is used by him for refinery fuel, either in the form of crude oil, still gases, or residual fuel oil. The cost of crude or products so used by the refiner will have to be absorbed in part by him and will not be passed along to the consumer.
4. This accounts for the difference between the PAW and OPA estimates of the cost of the price advance.
5. Based on consumption in the third quarter of 1942, 32 percent of the price advance would have been borne by the Federal Government through military purchases.
6. As military purchases expand still further, an even larger proportion of the total cost will be borne by the Federal Government.
7. Only 15 percent of the price advance will be borne by passenger car operators.
8. Utilities will bear only slightly more than 2 percent of cost of price increase.

Note: The cost per year of the recommended crude price advance is equal to less than two day's cost of the war. Total war expenditure averaged two hundred eighty million dollars daily in the five months through September, 1943, or five hundred sixty million dollars for a two day period.

Chart 7—Effect of Proposed Price Increase on Representative Consumers

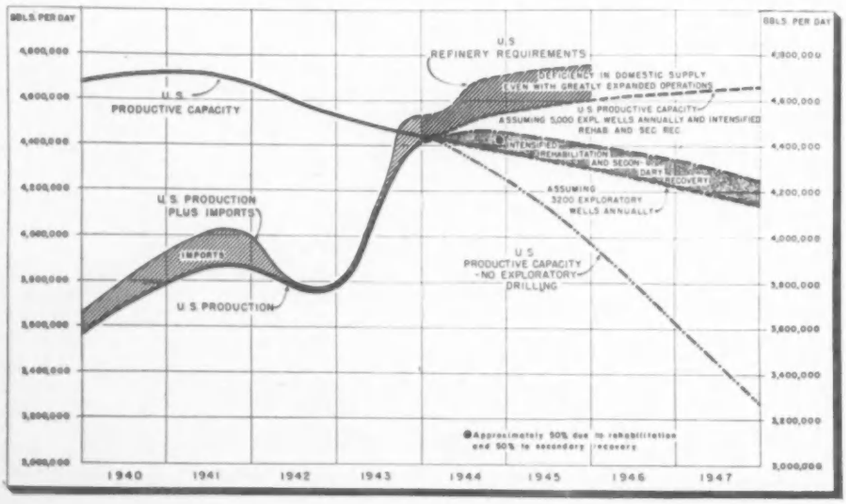


IT IS NOT ANTICIPATED BY PAW that there will be any resistance to these moderate price increases, and it is expected by PAW that representative consumers will gladly pay slightly higher prices, especially when they know it is for the purpose of protecting and augmenting the petroleum supply for fighting the war, and for essential civilian purposes.

1. The average passenger car operator will be required to pay only $2.97 a year additional for gasoline.
2. The average home owner will be required to pay only $11.93 a year additional to heat his home with fuel oil.
3. The average truck operator will be required to pay only $10.06 additional per year for his gasoline.
4. The average operator of the farm tractor will be required to pay only $4.96 additional per year for his gasoline.
5. The price increase will not be a burden to representative consumers.
6. Increased costs resulting from price advance will be insignificant part of total operating expense for most classes of industrial consumers.

Chart 8—United States Crude Oil Production and Requirements Trend

1. Crude oil production has met requirements in the past. Until recently productive capacity has been in excess of crude requirements.
2. Anticipated future demand for U. S. crude oil is projected at record levels.
3. If there is no exploratory drilling, crude oil productive capacity will decline drastically.



4. If wildcat drilling continues at recent rates, crude oil productive capacity will still decline substantially. Although it is likely that 3400 wildcat wells will be drilled in 1943, there is no assurance that this rate of wildcat drilling will continue in subsequent years under existing economic conditions.
5. Additional productive capacity will be added through rehabilitation and secondary recovery. Rehabilitation including reopening of some wells presently shut-in will account for about 50 percent of the increment in this segment, the balance will be due to increased secondary recovery operations.
6. If 5000 wildcat wells are drilled annually, the decline in productive capacity will be reversed and new productive capacity will build up to substantial proportions in the next several years. There is no certainty that a $0.35 per barrel increase will cause 5000 wildcat wells to be drilled annually.
7. If 5000 wildcat wells were actually drilled each year as a result of the price increase and if the rehabilitation and secondary recovery results shown in the chart were achieved, domestic productive capacity would be sufficient to provide a substantial cushion against any failure on the part of the foreign program to be fully met. It would also provide a cushion of crude oil supply for the postwar period.

All charts prepared by Production Division of PAW.

Mud Acid Treatment Effective in Reworking And Completing Wells

By DON L. CARROLL, Staff Writer

Experience records indicate that mudding-off or clogging of producing horizons can be overcome by use of special acid agents

WELL service experience over a period of years has demonstrated that the mudding-off of oil pays may result from a number of different causes, but that whatever the cause, this type of oil-flow obstruction can usually be overcome by proper use of special acid mixtures.

A common and annoying problem is removal of drilling-mud cake from the face of the pay. Less evident, but equally serious is the clogging of rock pores by mud that has penetrated far back into the formation, under circulation and hydrostatic pressures. In addition, it has been found that certain common clay minerals, originally present in the formations in the form of impurities or as shale breaks, become hydrated by contact with the water in drilling muds, which causes the individual particles to swell—thus sealing off the pay in varying degree, according to the amounts of these clay minerals present in the critical portions of pay sections.

Not only do such mud seals obstruct the flow of oil into the hole, but there is ample evidence that they are frequently responsible for the impounding of water within the formation, so that the oil is actually forced back from the vicinity of the hole.

Mud seals are also created while wells are in process of cleaning themselves, when conditions are such that the mud can accumulate behind perforated liners and screens, as it is exuded from the formation. This condition is more easily diagnosed than the others, since it causes an abnormal drop in pressure or in the previous production rate. In all these cases, though, mud constitutes the obstructing medium. This suggests the possibility that an indeterminate number of "dry holes" or abandoned producers may actually represent potential commercial wells, if the right procedure is used in their treatment. Operators should therefore make sure that the "mud factor" is duly considered before they give up on wells drilled in productive territory.

It should be emphasized that ordinary washing or other clean-out methods are in the main rather ineffectual in removing the mud deposits described above. Neither do standard hydrochloric acid solutions have any particular effect in dissolving or breaking through such mud seals, since carbonates are in no way responsible for any of the trouble.

Correct treatment calls for the use of special chemical fluids that can actually break down or dissolve those clay minerals comprising most of the bulk of drilling mud solids or clays present in oil-bearing strata. In field practice this theory has been applied with success, using hydrochloric acid solutions, to which have been added other chemicals or chemical agents which possess de-emulsifying and de-colloidizing properties, that also reduce the surface tension of fluid mixtures and actually dissolve such ordinary inert clay minerals as Montmorillonite, Beidellite, Illite, Kaolin and Muscovite.

It has been proved that standard, bentonite-type, drilling mud clay which has been treated for only a few minutes with an appropriate mud acid solution will filter water with comparative ease, even though only a small proportion of the clay mass has been dissolved. The effect is that of creating permeability in an impermeable substance, by taking away its colloidal or swelling properties. The same effect is produced by similarly treating actual mud cake specimens. The acid will increase the permeability of the cake from nothing at all to a high degree, without any apparent change in the appearance of the specimen.

On the basis of laboratory tests it is believed that one gallon of the acid mixture will break down approximately 3/10 of a pound of obstructing clay material. The reaction rate and the results are affected by the temperature factor, but not by pressure. At bottom hole temperatures of around 200 de-

Solubility of Clay-Bearing Pay Formations

WELL LOCATION	Pay Depth	Percent Soluble	
		Regular Acid	Mud Acid
S. Driscoll, Neuces Co., Texas	5305	22 6	45.6
	5310	19.9	43.1
	5315	9.2	49.5
	5318	24.3	45.0
Ganado Pool, Jackson Co., Texas	5070	2.9	33.7
	5085	2.5	23.8
	5086	2.5	24.1
	5090	2.8	24.6
	5094	3.2	28.3
	5617	0.8	42.5
Mathis Pool, San Patricio Co., Texas	5614	9.3	49.1
	5622	4.5	63.0
	5627	0.4	30.0

Solubility of Drilling Muds

MUD FROM	Percent Soluble	
	Regular Acid	Mud Acid
Hidalgo County, Texas	8.7	44.2
La Fourche Parish, La	9.1	77.8
Central Kansas	39.2	74.4
Galveston County, Texas	12.9	68.7
Commercial mixture (1)	0.3	76.6
Commercial mixture (2)	6.9	95.3
Commercial mixture (3)	7.3	95.3

grees the reaction time is perhaps 50 percent shorter than at a surface temperature of 70 degrees. It should be noted, however, that the acid will spend itself most quickly when the ratio of clay to acid is high. In normal drilling mud treatment the mud acid solubility is proportional to the Beidellite content of the material, as shown by X-ray analyses before and after treatment.

Mud acid treatment is especially applicable to those cases where the mudding-off of pays occurs in sandstone zones, that do not respond to ordinary acidizing methods, as do limestones. As far as the sand grains themselves are concerned, the mud acid dissolves them to only a limited extent. By removing the clay content of the sandstones, though, and whatever amount of drilling mud that has been deposited, porosity and permeability are either created or reestablished.

Records Accumulated

Records on actual use of mud acid have not been accumulated, comprising data that run the whole gamut of mud obstruction troubles. Problems of corrosion of metal equipment have been solved by adding certain inhibiting agents to the acid solutions. This protection against damage to metal parts is especially important in high temperature wells equipped with fine-gauge screens.

Other agents are added to lower the surface tension of the liquid. This allows acid to penetrate more effectively through the almost impervious mud and into the clogged formation. with this free-running characteristic the spent acid will likewise return to the hole with less difficulty afterward. Another agent is added to prevent the formation of oil-acid emulsions. This reduces the amount of cut oil produced from the well after treatment.

Many cases could be cited to demonstrate the value of mud acid treatments for clay-clogged wells. A few failures have been recorded, of course; but their percentage is negligible when compared with the instances in which wells at the abandonment stage have been restored to their original producing rates. A Frio sand well, for example, completed in 1933 on the flank of a Gulf Coast sand dome, flowed 150 barrels daily for about one year, when it was worked over extensively. So much time was spent on the workover that huge quantities of mud and water were lost into the formation, and the well could not be brought back onto production by swabbing and washing methods. It was virtually abandoned until 1939, at which time it was cleaned out to bottom and given an intensive swabbing test. It then began to yield at the rate of about 50 barrels per week. It was obvious that the sand had become water logged behind a mud seal that had caked the formation face and impregnated the sand for some distance back from the hole. Mud acid treatment was used early in 1940, and a complete cure was the result. The well again began to flow 150 barrels per day, and continued to do so. Equally successful results have been accomplished on other old wells, and on new wells having delayed completions due to similar mud troubles, especially the tight clogging of screens.

Pays in many fields are troublesome as mud drinkers or as contributors of pore-sealing substances that become active when water comes in contact with them. In other fields such conditions may not be so evident. The conclusion may be drawn that many wells never reach their potential rates of yield because of mud or water seals at pay levels, and that many stripper wells may be rejuvenated if mud is responsible for their non-productivity.

Oil's Place—By Ickes

■ CONTINUED FROM PAGE 11

possible, we would not be able to make the most of our limited oil transportation and operating equipment and our available supplies abroad, and get to the battle fronts petroleum products to supply them. If anybody has a better way to suggest, I would be glad if he would come forward with it.

Private Enterprise

I think that the subject of private enterprise might be a good one on which to conclude my remarks. From the very beginning, I have said that it would be my policy to rely as fully as possible upon free enterprise to get the wartime oil job done; that it would be my objective to hold Government direction and control to the minimum consistent with wartime requirements. It is my firm conviction that it is because of this policy that the petroleum industry has done so excellent a job so far in this war.

I take this occasion to acknowledge, as I have repeatedly done before, my appreciation of that job. You have cooperated in the most burdensome kind of circumstances. You have had continuing shortages of materials and increasing shortages of manpower. You have been called upon by us in Government to rearrange your operations at considerable inconvenience and often at considerable expense. Perhaps the one consoling circumstance—in addition to your satisfaction that you have had a major part in the victory—that we are winning—has been the fact that, through the industry committees and the Petroleum Industry War Council, you have at least been able to be heard when you have had something to say.

I am sure that the members of the Council will not mind if I single out one of them—their Chairman and your President—for particular mention. In fact, I feel certain that they will agree with me that Bill Boyd deserves particular mention. His intelligent cooperation with us of PAW has been no minor factor in the effectiveness of the Government-industry partnership plan. For this, he has our thanks. For this, he deserves your thanks.

When I addressed your convention in San Francisco back in 1941, there were those of you who feared that I wanted to take over the oil industry.

Parenthetically, there are those now in the coal industry who feel that it is their turn to fear, or pretend to fear, that I am in favor of the nationalization of that industry. That isn't so either. The fact that I turned the coal mines back as fast as I did—some commentators thought that I turned them back too fast and too early—ought to be some assurance that I am not for the nationalization of the coal industry. I wanted to get rid of these coal properties as fast as I could, and, just between you and me, I had hoped that the President, if he found it necessary to take them over again, would designate someone else as custodian of the mines of the country.

I hope that I have disabused you of the delusion, that many of you had, but if there still be any who doubt, let me repeat that I still feel as I did in San Francisco.

At one of the meetings of the Petroleum Industry War Council, some months ago, one member expressed the fear that the industry would become so tangled in Government regulations and control that, when peace came, it would be impossible to untangle it. I assured this gentleman—and I repeat that assurance here—that, when the emergency has ended, if I have any authority in the matter, you will find me on your side working to restore the oil industry, so far as may be possible, to its ante bellum competitive status just as speedily as it can be accomplished. We will get rid of the orders and directives — and without a strip tease.

A New Application of Water Injection For Maintaining Reservoir Pressure And Increasing Natural Water Drive

By WILLIAM L. HORNER and D. R. SNOW
Barnsdall Oil Company, Tulsa, Oklahoma

THE most important objectives sought for any field are: 1, maximum ultimate yield; 2, maximum production rate per well at minimum cost per barrel. To attain these objectives, control of reservoir pressure is a factor of greatest importance. For this purpose, a method for maintaining original reservoir pressure by increasing the natural water drive was devised and is being practiced in the Midway Field, Arkansas. So far as known, this is the first instance in which injection of extraneous water has been applied to an entire pool —and in the very early stages of its productive life.

This method should be applicable to many other newly discovered or partly depleted oil pools where a deficiency of natural water drive can be recognized or where reservoir conditions are such that artificial water drive could be applied.

Data from Midway Field, Arkansas, are presented which demonstrate a certain degree of control over pressure behavior in a large part of the reservoir by means of fresh-water injection. Reservoir pressures were increased in an area one mile in diameter during a period when withdrawals from the pool as a whole were considerably increased. Over the five-month period following initial injection, the average reservoir pressure for the entire field declined at a negligible rate, whereas until that time the average reservoir pressure had fallen at the rate of approximately ½ pounds per square inch per day.

Presented before Division of Production, Twenty-fourth Annual Meeting of American Petroleum Institute, Chicago, Ill., November 11, 1943.

RECOGNITION by the industry of the advantages of water drive at maximum reservoir pressure has resulted from considerable research and many years of practical study of reservoir behavior. It has been advocated that production under effective water drive be accepted as the engineering and conservation standard to be achieved and, further, that the rate of production for each pool should be restricted so as to permit the water drive to be effective.[1] There is little doubt that the majority of oil pools have had some degree of water drive. In the Bartlesville sand in northeastern Oklahoma it was found that pools having the best water drives were located nearest the outcrop from which a certain amount of recharging water could have entered and in areas known to be connected effectively with large unbroken volumes of water-bearing reservoir.[2] Many pools depend upon the expansion of water in major sand bodies to supply influx for natural water drive. Examination of geological conditions shows that water influx often is seriously limited, and explains why some pools have had only partial water drives.[3] In the Oklahoma City Wilcox Pool it is reported[4] that 509 million barrels of pore space, representing only 41.7 percent of the reservoir, was permeated by water by July 1, 1940, and since that time water influx has continued at a greatly reduced rate. Less than 20,000 barrels of water per day has been produced since April, 1938, with no rise in water level.

Results of studies of reservoir behavior and examination of production records in many fields have shown that natural water drive is usually unable to maintain sufficiently rapid influx at a rate for maximum economic benefit. Restriction of production rates often will be found to be acceptable conservation practice, although such procedure does not increase the volume of water available. Inasmuch as the question is that of "degree" of water drive, it should be well to search for more positive means of its control. Injection of extraneous water may be regarded as a direct approach to the problem of improving and sustaining natural water influx. However, it is believed that no quantitative data have been accumulated and presented heretofore which demonstrate the feasibility of the methods. In the Midway Field, Lafayette County, Arkansas, fresh water has been injected since April 19, 1943, into the Smackover formation underlying and at the edge of the oil reservoir. The essential factual data, together with the results of material-balance calculations and pressure predictions, are presented.

FIGURE 1
Location of Midway Field in Southwestern Arkansas

Reservoir Characteristics

The field was discovered by Barnsdall Oil Company's Bond 1, which was completed, January 1, 1942, in the Reynolds "oolitic" zone of the Smackover limestone.[5] As of October 1, 1943, there were 39 producing wells in the field —34 flowing and 5 pumping. The producing area has been found under sections 9, 10, 11, 12, 13, and 14, of township 15 south, range 24 west; and section 18, township 15 south, range 23 west, Lafayette County, Arkansas (Figure 1). The field lies to the north of a major faulted zone regarded as being related to the Balcones fault system of Texas, and which previously had marked the northern limit of

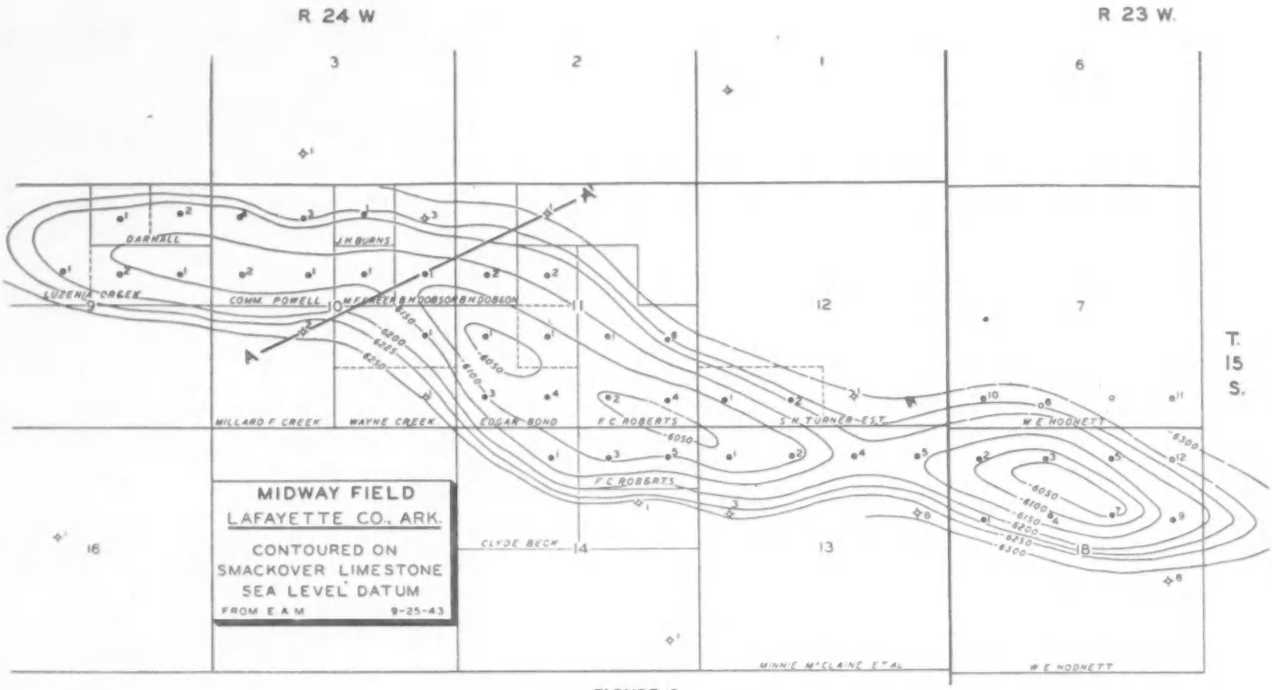


FIGURE 2
Structure Map, Contoured on Top of Porosity

production from the Smackover limestone. A productive area of approximately 1700 acres is estimated (Figure 2).

Study of the structural map and cross-section (Figure 3) shows the reservoir in the crest of a steeply folded elongated anticline. There is no gas cap. The oil column reaches a maximum thickness of approximately 200 feet, which is in an area around the discovery well. The water-oil contact is apparently not a definite plane; but a practical and arbitrary level has been chosen, 6225 feet below sea level, on the basis of information from production tests, mud-analysis logs, electrical logs and cores. The volume of Smackover formation below the top of porosity and above 6,225 feet below sea level has been calculated to be approximately 126,000 acre-feet. Study of numerous electrical logs, core analyses, and a bottom-hole-sample analysis shows this volume to contain 150 million barrels of oil as would be measured under stock-tank conditions. This amount of oil is the amount in place—a portion of which is recoverable—the amount of recovery largely depending on the efficiency of expulsion.

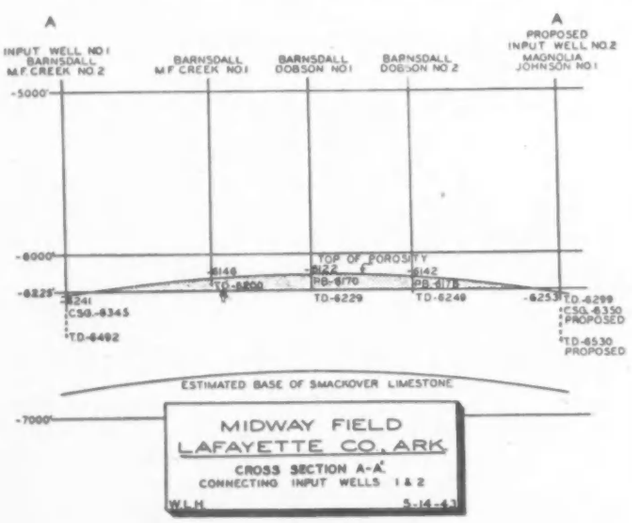


FIGURE 3
Cross-section Connecting Input Wells No. 1 and 2

Efficiency of recovery by water drive is increased by flushing more of the formation, therefore it is significant that a certain degree of non-uniformity of the formation is disclosed by data collected on many of the wells drilled. Coregraphs and electrical logs (Figure 4), as well as drilling-rate curves, show that a large portion of the reservoir is of low permeability. When limited by a given completion technique, more oil can be recovered if sufficient water is available to continue operations until maximum higher percentages of water can be produced; while the flushing action is being continued in the less-permeable parts.

The initial reservoir pressure was measured to be 2920 pounds per square inch at 6,050 feet below sea level. Bubble point of the reservoir oil is 2528 pounds per square inch, absolute, at a reservoir temperature of 182 deg F. Rapid decline in bottom-hole pressure, which characterized reservoir behavior, was observed following discovery of pressure falling to 2665 pounds per square inch by May 1, 1943—a decline in excess of ½ pound per square inch per day. During this period frequent and accurate measurements of reservoir pressure were obtained by Barnsdall Oil Company and Arkansas Oil and Gas Commission, and at the same time accurate measurements (Figure 5) were recorded as to the amounts of oil, gas, and water produced. Physical measurements on a reservoir sample of crude provided information as to the expansibility of the reservoir oil with changes in pressure, and also determined the formation volume factor and shrinkage used for correcting stock-tank oil volume to barrels of reservoir oil.

Based on these measurements, material-balance calculations were made (Figure 6) for several successive periods during withdrawal of more than two million barrels of oil. The principle of these calculations[6] used in this connection to determine the amount of water drive can be stated as follows:

Total withdrawals, barrels of reservoir oil=expansion of reservoir oil+water influx

The total amount of water influx for each pressure survey was calculated by that equation, the remaining factors hav-

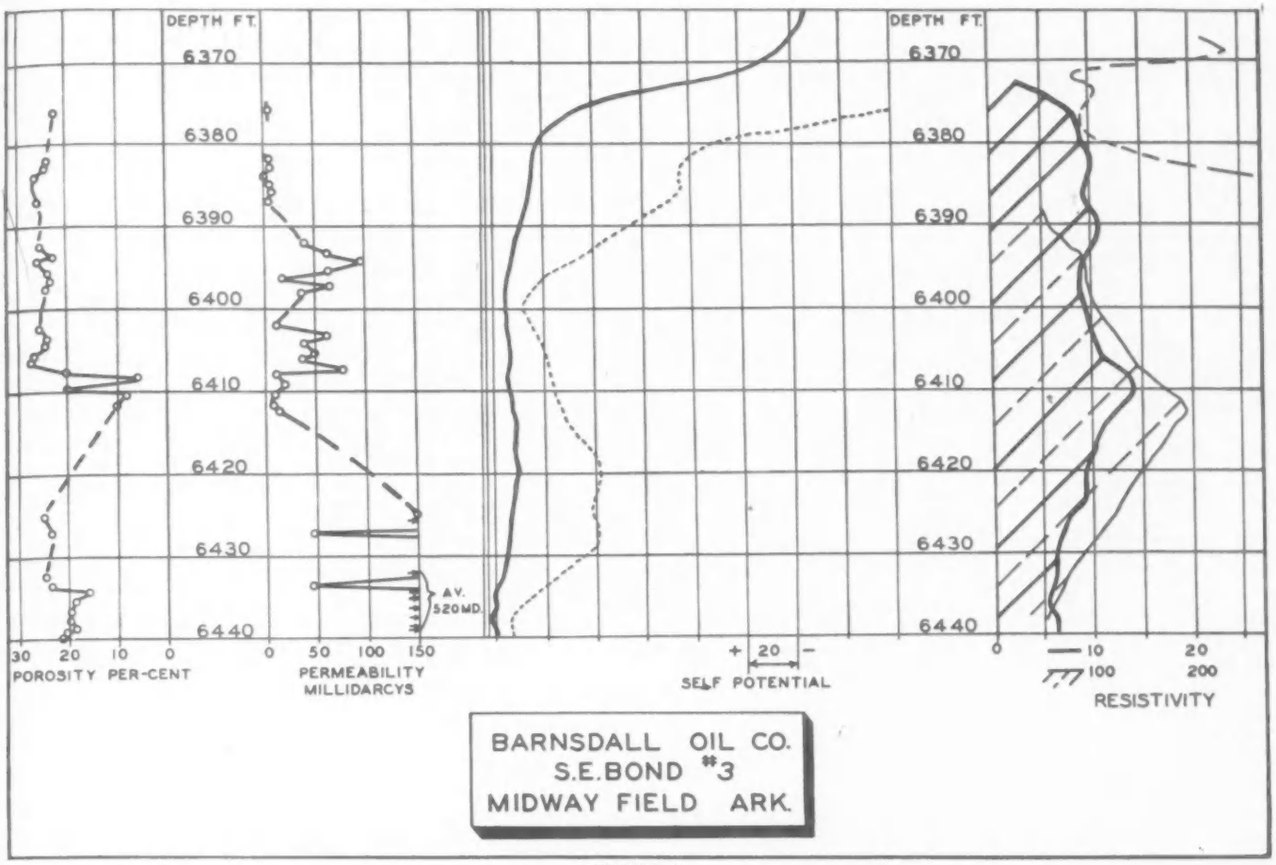


FIGURE 4
Coregraph and Electric Log—Barnsdall No. 3 Bond

ing been determined by the pressure—production history of the pool and the physical measurements made on the crude oil. Based on the pressure surveys ending February 16, 1943, an average daily influx of 5290 barrels per day was calculated for the previous 55-day period. This figure was compared to 6660 barrels, the average daily withdrawal of reservoir fluids for the same period. This suggested the probability of retarding the rate of pressure decline by augmenting the natural drive some 1400 barrels per day by injecting a larger quantity of fresh water. It was obvious that, should this step succeed, reservoir pressures could be increased by increasing injection rates. The literature shows[1] that successive reductions in withdrawal rates failed to halt but temporarily the decline in reservoir pressures in Buckner, a similar pool, near Midway. Because of these reasons, and because an adequate low-cost water supply was available at Midway, the economic possibilities of experimental water injection were clear.

With the permission of the Arkansas Oil and Gas Commission, Barnsdall's M. F. Creek 2, a dry hole located in the southeast quarter of section 10, township 15 south, range 24 west, was converted into an input well. The well had encountered the top of Smackover porosity at 6240 feet below sea level. To convert this well for input purposes, 5½-inch-OD casing was set at 6343 feet below sea level in the 9⅞-inch-diameter hole which had been deepened to 6490 feet below sea level. The last 20 feet drilled were dense crystalline limestone, without permeability. Of the section exposed, approximately 100 feet were indicated to be permeable according to an interpretation of the electrical

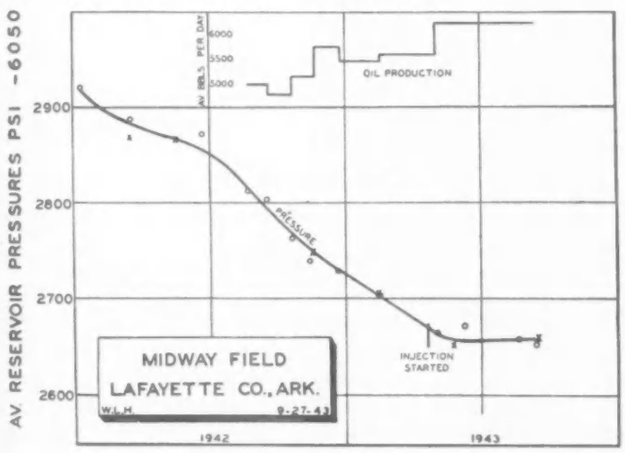


FIGURE 5
Pressure-Production History

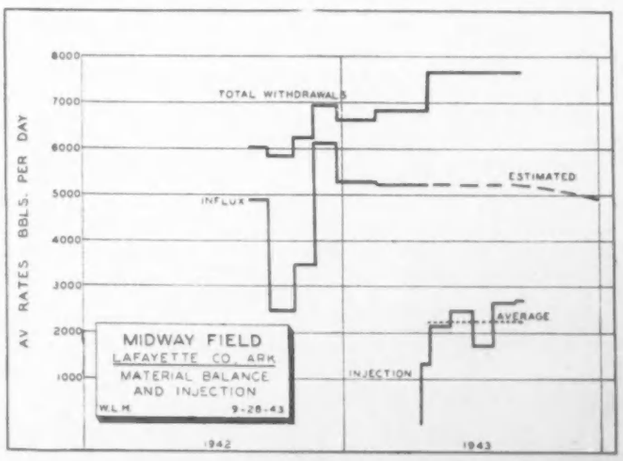


FIGURE 6
Material Balance and Injection

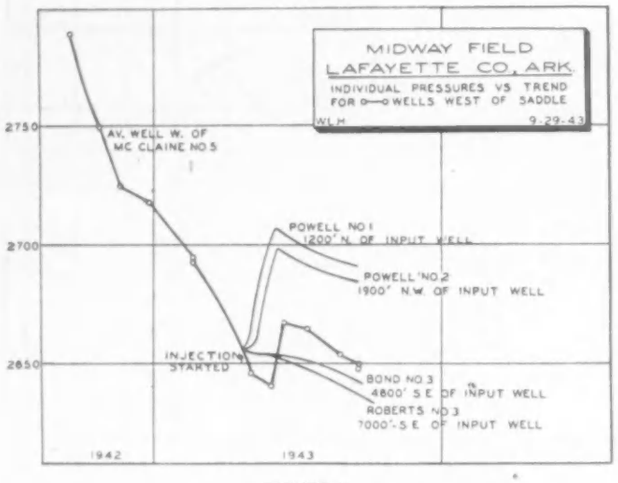

MIDWAY FIELD
LAFAYETTE CO., ARK.
INDIVIDUAL PRESSURES VS TREND FOR 9—0 WELLS WEST OF SADDLE
W.L.H. 9-29-43
2750
2700
2650
AV. WELL W. OF MC CLAINE NO 5
POWELL NO 1 1200' N. OF INPUT WELL
POWELL NO 2 1900' N.W. OF INPUT WELL
INJECTION STARTED
BOND NO 3 4800' S.E. OF INPUT WELL
ROBERTS NO 3 7000' S.E. OF INPUT WELL
1942
1943

FIGURE 7
Individual Pressures, Four Wells, Vs. Trend for Wells West of Saddle

log and cuttings. The top of the zone exposed was 118 feet below the water-oil contact for the field, and 103 feet below the top of the formation (Figure 3). The open hole was under-reamed to gage, the surface of the formation being scraped with the underreamer while fresh water was used to circulate out the cuttings. The face of the formation was cleaned with a light acid wash, and a short injection test was made to determine input capacity—which was found to be approximately 3 barrels per day per pound per square inch of pressure. After acidizing with 7000 gallons, another test showed 7.6 barrels per day per pound per square inch of pressure. From a shallow water-supply well operated by gas lift, water was supplied to the well through a 4-inch by 10-inch power pump, and injection was commenced on April 19, 1943. Four days later the injection capacity had fallen to 4 barrels per day per pound per square inch of pressure. Since that date the input capacity has remained substantially the same, no decline having been noted in the 4-mon'h period ending September 23, 1943—at which time a total volume of 350,000 barrels had been injected, an average rate of 2200 barrels per day against a pressure of approximately 620 pounds per square inch. The fact that pressures required to inject at a given rate have not increased may be taken as an indication that the water injection had not plugged the formation.

Ordinarily the allowable rate of production for a field in Arkansas after having had a pressure decline of ½ pound per square inch per day would have been ordered reduced. However, the Arkansas Oil and Gas Commission recognized favorable possibilities when plans for experimental injection were submitted for approval February 24, 1943; and, consistent with its progressive attitude, ordered that the allowable per well remain substantially unchanged at approximately 175 barrels per day following the hearing April 6, 1943. The commission again renewed its order on July 21, when evidence of success was submitted at the statewide hearing. Measurements of results of the injection was aided greatly by the fact that individual well allowables were held constant for five months prior to the start of the experiment, and have since remained unchanged.

Therefore, in the major portion of the field, where no changes in withdrawals have occurred, pressure history since the start of injection might be interpreted freely as a measure of the effectiveness of the experimental system for augmenting the natural water encroachment. Because pressure measurements made since May 1 show no great change, it follows that injection was maintained at a rate sufficient, together with the natural drive, to replace the fluids as withdrawn.

The first effects on the reservoir pressures were observed in wells nearest the input well. As of September 14, two offset wells averaged approximately 2690 pounds per square inch; two other wells about one mile away—one mile from the input well—averaged 2640 pounds per square inch as compared with 2600 pounds per square inch, the pressure expected for each of the 4 wells if there had been no injection Figure 7). The indicated pressure gradient of 50 pounds per square inch per mile is significantly low.

Construction for expansion of the injection facilities is under way. An agreement recently entered into by the six operators in the field at Midway specifies a system of four input wells to be furnished water under pressure from a central plant, which plant is to be supplied with water from shallow water wells and brine from a salt-water gathering system (Figure 8). The cost of the complete project is estimated at approximately one-tenth of the development cost for the field, exclusive of geological and geophysical expense. It provides for permanent brine disposal and for a flexible program of water input.

Predictions of Recovery and Water Requirements

The capacity of the several productive shallow water wells in the field averages about 2500 barrels per day per well. The shallow water sands are found at depths from 120 feet

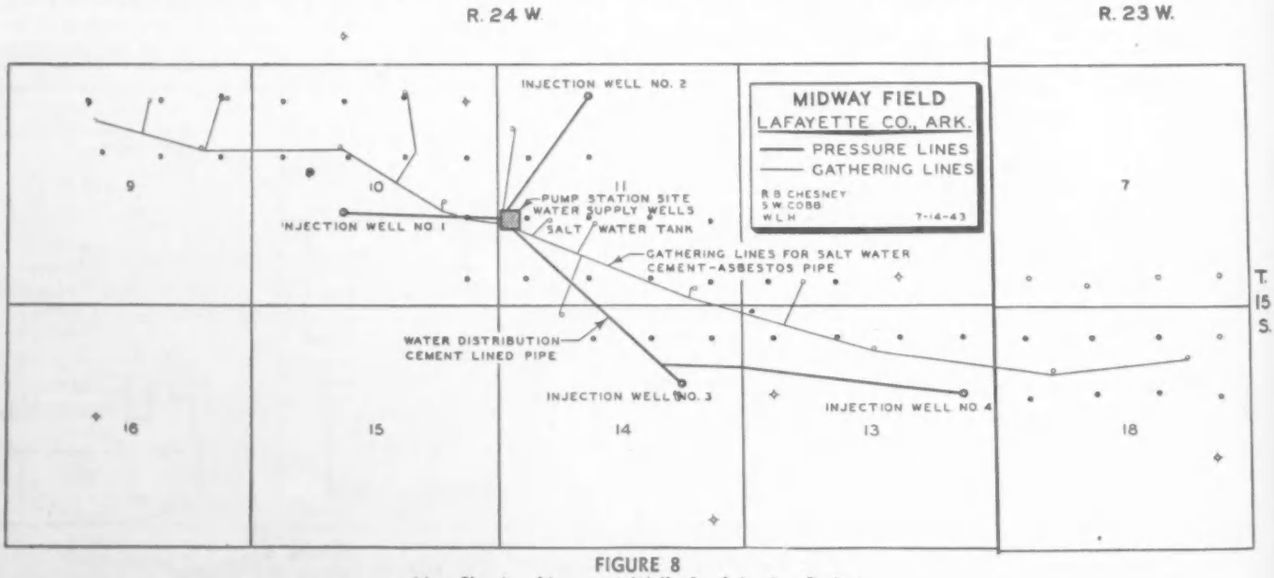


FIGURE 8
Map Showing Lines and Wells for Injection Project

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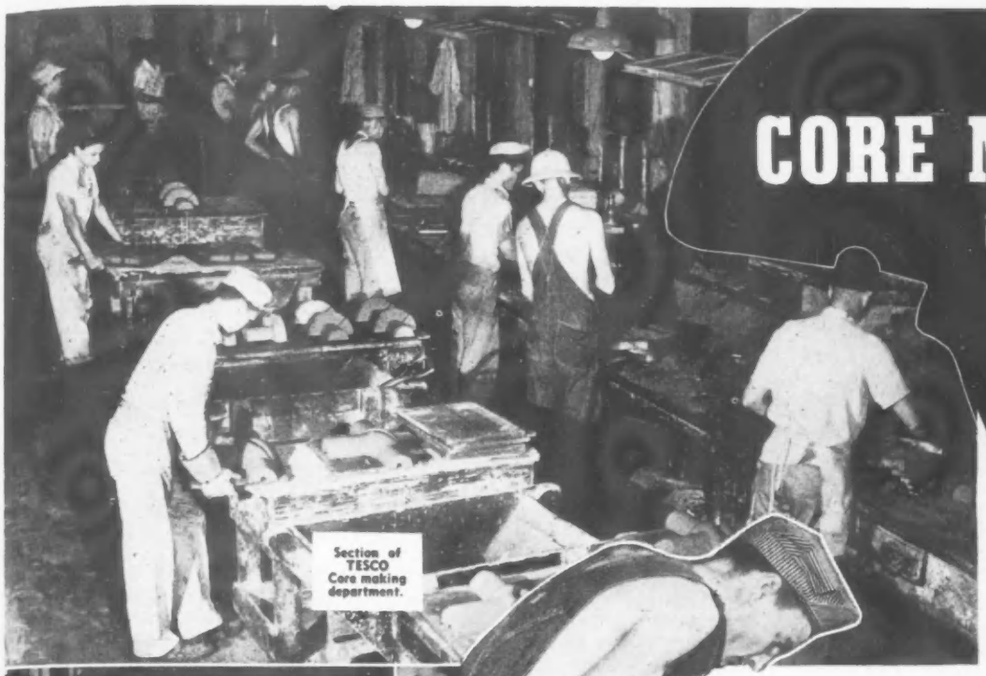

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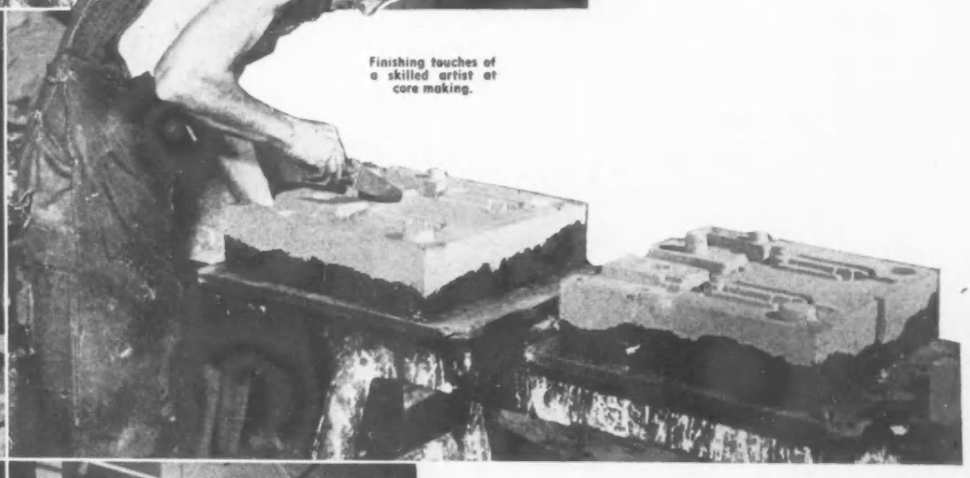

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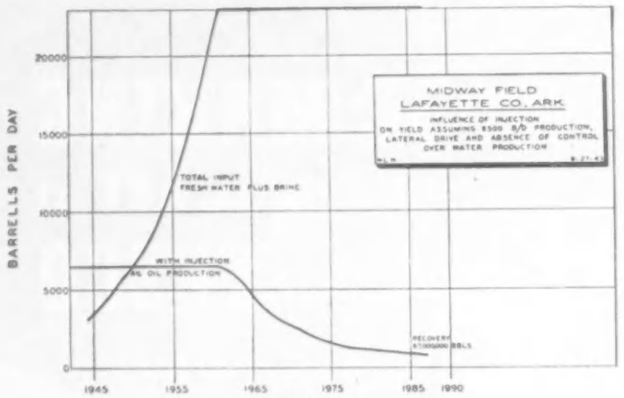


FIGURE 9
Influence of Injection on Yield

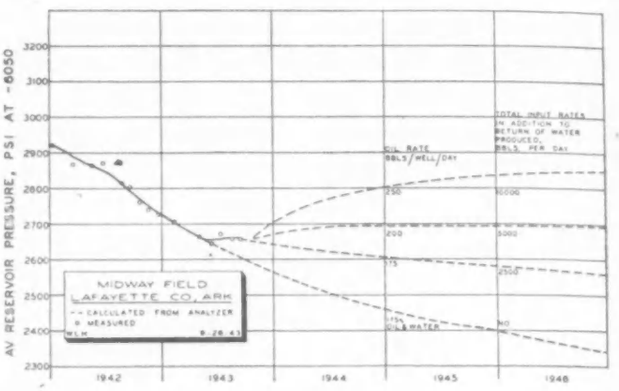


FIGURE 10
Influence of Injection on Pressure-Production Trends

to 450 feet, and extend in an area covering the major portion of the field. For the present rate of withdrawal, it is calculated that the maximum amount of fresh water required will be 8000 to 10,000 barrels per day, increasing gradually to that amount from the present requirement of 3000 barrels per day (Figure 9), and decreasing after production decline. Increased rates of oil withdrawal or increased bottom-hole pressures will require more rapid injection (Figure 10).

In order to anticipate the amount of salt water to be handled and injected with the extraneous fresh water required, calculations were made based on conservative conditions. It was assumed for the purpose of calculation that the water drive is to be entirely lateral, and that edge-water encroachment is the displacing force. It was assumed that the encroaching edge water moves through each layer of formation at a speed proportional to the permeability of that part, and that all of the water which will move through the more permeable zones after they have been flushed must be produced in order to recover oil from the formation having low permeability. These assumptions obviously make no allowance for the possibilities of selective completions, nor for the success of workover jobs for reducing the amount of water production. Technological advances, however, can reasonably be expected to provide means for effectively reducing water percentages in the future. It is likewise conservative to expect that the pressure-maintenance program will provide sufficient energy to induce vertical movement of the water table through much of the formation of low permeability, which otherwise would be bypassed by a strictly lateral drive. Statistical analysis of the permeability measurements has been applied—showing that, without control over water production, the combined rate of fluids to be injected could exceed 22,000 barrels after 20 years of production at 6500 barrels per day. On the assumption that greater injection capacities would not be provided and that no decrease in reservoir pressure is desired, the rate of oil production then is shown to commence to decline—decreasing in proportion to a rise in salt-water production. An ultimate yield of 67,000,000 barrels is calculated under the conditions stated.

A yield of less than one-half of the amount is calculated for production without injection, the difference being due to the limited volume of natural influx expected. Natural influx here is dependent on expansion of water from the definite volume of Smackover limestone known to be connected to the pool. From these facts, it is calculated that less than one-ninth of the desired quantity of water can enter the pool during its productive life if unaided by injection. The resulting partial water drive can cause only partial recovery of oil.

Five months of water injection at Midway has shown indications that natural water drive has been augmented by the use of one input well. By the use of additional injection wells, properly located so as to aid more uniformly the natural water drive under the pool, it is expected that considerable control can be exercised over the pressure behavior of the field. Pressure-prediction calculations, following methods described by W. A. Bruce,[8] are used to show graphically (Figure 10) that pressure may be controlled even to the extent of being increased, while at the same time increasing the production rate—provided the proper amount of extraneous water is injected, together with all of the brine produced.

Choice of an optimum pressure for the reservoir will depend on several factors including cost of injection, productivity index of individual wells, percentage of water in fluid produced, and rate of production. It appears to be feasible, and it may be found to be profitable, to raise the reservoir pressure considerably above the original pressure in order to keep most of the wells flowing. Although maximum productivity and greatest ultimate yield are of first importance, engineering consideration of lifting methods presents additional interesting possibilities in connection with a long-range program of pressure maintenance by this method.

Conclusions

The results obtained at Midway will invite the adoption of this practice in other pools. Careful study and caution are appropriate when diferent conditions are met. Under certain conditions other secondary means of control would be found preferable. In many similar reservoirs, however, there is every likelihood of its successful and profitable application.

Acknowledgment

The writers gratefully acknowledge valuable aid rendered the experiment by production, engineering, and geological personnel of Barnsdall Oil Company and by the Arkansas Oil and Gas Commission.

References

[1] **E. L. DeGolyer, "Production under Effective Water Drive as a Standard for Conservation Practice,"** *Am. Inst. Mining Met. Engrs. T. P. 1340* (1941).

[2] D. R. Snow, **"Water Encroachment in Bartlesville Sand Pools of Northeastern Oklahoma and Its Bearing on East Texas Recovery Problem,"** *Bull. Am Assn. Petroleum Geol.* **16,** 881-90 (1932).

[3] J. M. Bugbee, **"Reservoir Analysis and Geologic Structure,"** *Am. Inst. Mining Met. Engrs. T. P. 1527* (1942).

[4] D. M. Katz, **"Possibilities of Secondary Recovery for the Oklahoma City Wilcox Sand,"** *Am. Inst. Mining Met. Engrs. T. P. 1400* (Table 7) (1941).

[5] E. A. Markley and C. N. Valerius, **"Geological Note—Midway Field Discovery, Lafayette County, Arkansas,"** *Bull. Am. Assn. Petroleum Geol.* **26,** 1289-91 (1942).

[6] R. J. Schilthuis, **"Active Oil and Reservoir Energy,"** *Trans. Am. Inst. Mining Met. Engrs. (Petroleum Development and Technology),* 33-52 (1936).

[7] W. A. Bruce, **"Pressure Predictions for Oil Reservoirs,"** *Am. Inst. Mining Met. Engrs. T. P. 1454* (1942).

[8] W. A. Bruce, **"An Electrical Device for Analyzing Oil Reservoir Behavior,"** *Am. Inst. Mining Met. Engrs. T. P. 1550* (1943).

The Criteria for Determining an Oil Field's Susceptibility to Secondary Recovery Methods

Submitted by the Standing Subcommittee on Secondary-Recovery Methods of the Topical Committee on Production Practice, Division of Production, American Petroleum Institute, and presented at the annual meeting of the Institute at Chicago, November 9, 1943

AT THE 1942 annual meeting of the American Petroleum Institute in Chicago, the California District Topical Committee on Production Practice suggested that it would be most helpful if a specific paper were available summarizing the basic data that should be secured and the methods which should be employed in analyzing the susceptibility of oil fields to secondary-recovery operations. This paper has been prepared by the members of the Standing Subcommittee on Secondary-Recovery Methods in response to the California committee's suggestion.

One of the earliest attempts to systematize the investigation of the secondary-recovery possibilities of oil fields was made by Torrey and associates in 1935 who, at that time, were engaged in a study of the oil fields of the entire Pennsylvania Grade Crude area. The schedule prepared for this work was published[1] subsequently in 1937. More recently, Dickey[2] in his work for the Pennsylvania Topographic and Geologic Survey, revised and improved this schedule—adapting it to the more advanced modern technique. Horner's[3] contribution in the recent API publication *Secondary Recovery of Oil in the United States* is the most recent analysis of certain factors controlling the action of secondary-recovery methods.

It should be evident, similary to any form of engineering investigation, that the proper study of the application of secondary-recovery methods requires a systematic approach, particularly if several fields are involved. From the standpoint of filing of information and of future reference to records and statistics, it will be found most convenient if all data are assembled in accordance with some predetermined plan. For this purpose Part I of this symposium presents a schedule of information needed for the study of the adaptability of oil fields to secondary-recovery methods, and Part II presents discussions on the proper analysis of the data after they have been obtained.

It is recognized that all oil fields are not adapted to the application of secondary-recovery methods. Such being the case, it is just as essential to provide information which will assist in avoiding failures as it is to encourage the use of secondary-recovery methods in fields where the probability of success is high.

The fact that secondary-recovery operations may yield very satisfactory results in one certain field is no definite criterion that the same degree of success will be attained in others, even though they may be located in close proximity and produce from the same oil-bearing formation. Unfortunately in the past elaborate plants, involving very considerable investments, have been installed without proper investigation of reservoir conditions, just because secondary-recovery operations in nearby areas have been successful. By accident, some of the projects so commenced have produced a satisfactory recovery, but in other instances the increase in production has not been sufficient to return the development expense.

Although the operation of secondary-recovery projects is not a subject for consideration in this paper, it is appropriate to note that constant vigilance is required after even the best designed project has been commenced. Too frequently, the operator, after making a careful and exhaustive study of an area in a field, is content—after the installation of enlarged storage capacity to take care of the anticipated increase in production—to relax and give little attention to the reaction of the reservoir to the injection of gas or water. Such procedure cannot be approved, because readjustments in reservoir conditions, brought about by the injection and withdrawal of fluids, may make desirable radical changes in operating practice long before the time of secondary depletion has been reached.

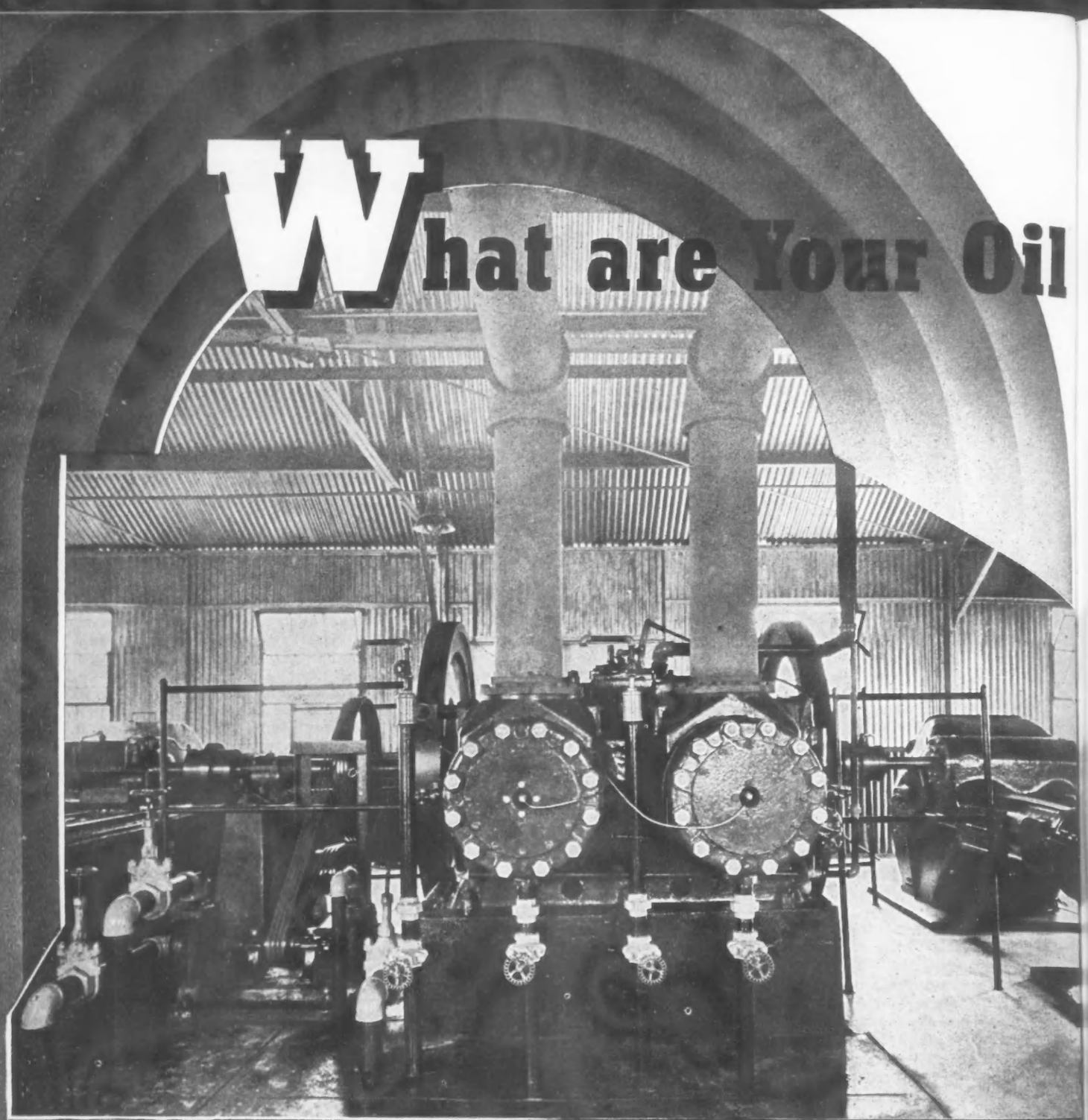
The urgency for increased production of certain types of crude required for the war effort, which may not be secured in adequate quantity immediately by exploration for new fields, and the pressing need for petroleum products near centers of large consumption, provide an important opportunity for the advantageous expansion of secondary-recovery operations. The fact that this can be done many times with a minimum of new materials, by the utilization of existing wells, and by the use of secondhand equipment is a contribution by the oil industry of no small consequence toward the support of the armed forces of the United States and its allies and to the necessities of essential civilian needs.

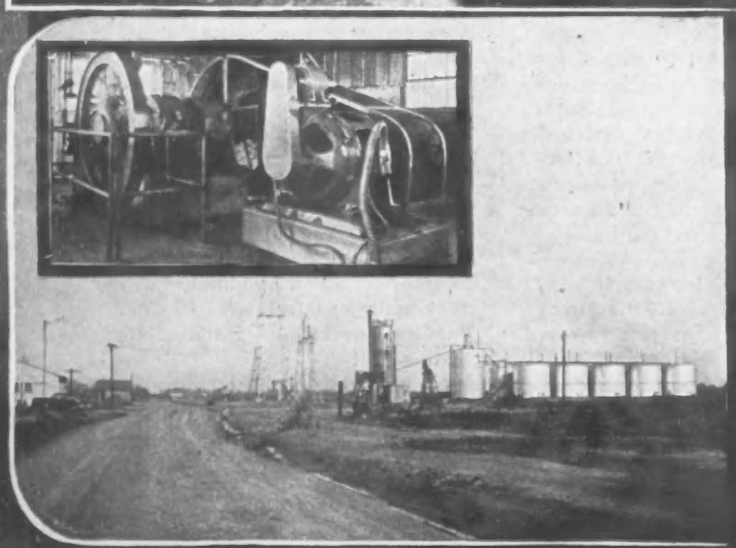
Part I—Schedule of Information Desirable for a Study of the Secondary-Recovery Possibilities of an Oil Field

1. General Data

A. Name and title of investigator submitting report.
B. Date investigation was commenced.
C. Date investigation was completed.
D. Date report was submitted.
E. Common name of field.
F. Location of field: county, township, range, and section; U. S. Geological Survey, Quadrangle; other recognized survey, warrant, grant, etc.
G. Name and address of operators with lease lists and acreage; description of leases. Property map of field showing lease ownership.
H. Source of all information: name, title, address, telephone.
I. Possible sources of further information.
J. Area of field, in acres, for each producing horizon.
K. For each producing horizon, individual field map showing location of

What are Your Oil





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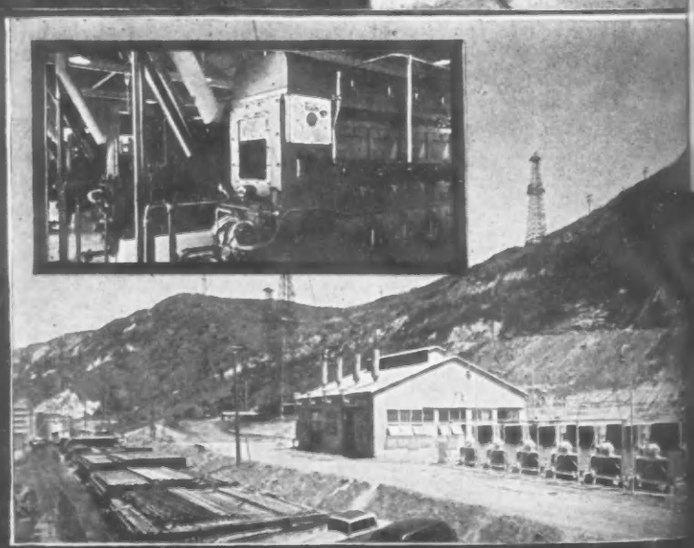

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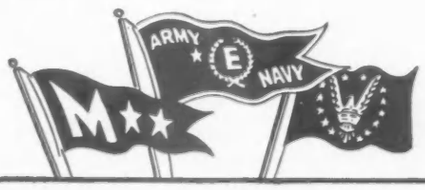

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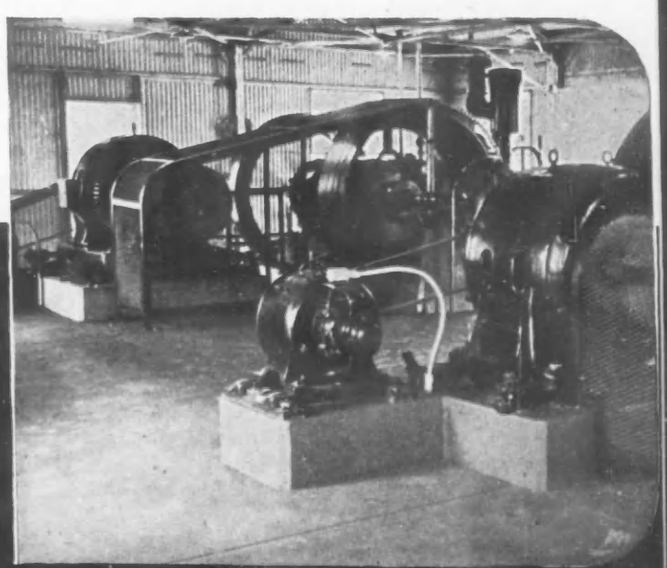

Another money-saving installation of two Superior Engines in a well-known Illinois oil field operation.

all wells drilled, and indicating by conventional symbols abandoned wells due to depletion or water encroachment, producing oil wells, producing gas wells, and dry holes.

2. History

A. Discovery date for each producing horizon; name and location of discovery well.

B. Age of field from each producing horizon.

C. Brief history of development. List active operators during initial stages of development. Rate of development. Market and price paid for crude at time of initial development. All pertinent facts which might affect secondary-recovery operations. Effect of discovery of deeper producing zones on rate of development.

D. Record of redrilling, if any.

E. Effect of accidental floods, if any, from casing leaks or improperly abandoned holes.

F. Date vacuum was applied, and any secondary-recovery operations commenced.

G. Record of well abandonment and area of field abandoned.

H. Data of abandoned wells. Method of plugging. Amount of casing pulled and amount of casing left in holes. Junk left in holes.

I. Primary oil production of field for each producing horizon by convenient time periods.

J. Total primary production of field for each producing horizon.

K. Average primary recovery per acre for each horizon.

L. Average primary life of wells.

M. Average primary production of wells at time of abandonment.

3. Petroleum Geology

A. All well records and electrical logs available. Completeness and reliability of records.

B. Stratigraphy: Typical well records and location of wells from which records have been obtained. Well elevations. General information regarding various geologic formations encountered; their thickness, continuity, and lithology. Convergence of formations in field and any unconformities. Records of deep test wells are important.

C. Structure: Surface and subsurface structure maps. Faults, fracture zones, crevices, etc. Relation of occurrence of gas, oil, and water to structural conditions.

D. Name of sands encountered: Note whether they carry oil, gas, or water, and the amounts thereof, or were dry.

E. Average depth of each sand. Average interval between sands and horizon markers recognized by drillers and paleontologists.

F. Average thickness of sands: Amount of sand usually penetrated.

G. Variation in thickness of sands throughout field.

H. Composition of sands: Whether coarse or fine-grained, or conglomeratic; mineral composition of sand; occurrence of nodules and concretions; whether sand is cross-bedded, blocky, massive, flaggy, or thin-bedded; and whether there are any indications of open joint planes or crevices of any kind. Type of cementing material and degree of cementation. Presence of slit, clay, or bentonite. Secondary cementation and metamorphism. Shape of sand grains. Presence of shale breaks. Description of petrographic examination of thin sections. Heavy mineral studies. Grain-size analyses.

I. Composition of limestone reservoirs: Note mode of occurrence of oil and gas—whether in interbedded sandstone lenses, solution cavities, coral reefs, oolitic zones, fractures or joints, or along bedding planes and formation contacts.

J. Nature of cap rock and of beds immediately underlying reservoir. Hardness. Presence of water. Shale replacements in the top or bottom of sand. Irregularities in contact of reservoir with overlying and underlying beds.

K. Lateral changes of reservoir throughout field. Note variations in thickness, porosity, permeability, saturation, cementing material, shale breaks, etc. Locate shaly phases and shaly areas. Are the limits of oil production defined by thinning out of the pay zone, by variations in sand porosity, by gas productive areas, or by water in the sand? Note effect of unconformities and disconformities.

L. Position of gas, oil, and water contacts in reservoir. Pay zones and their thickness. Note initial gas production of oil wells and variations of same throughout field. Note any early production of water with either gas or oil. Determine source of water, and whether salt or brackish.

M. Data on dry holes. Did producing formation pinch out or carry water?

4. Core-Analyses Data

A. Oil saturation and profile.

B. Interstitial or connate-water saturation and profile. Salinity of water.

C. Effective and absolute porosity and profile.

D. Permeability and profile:

(1) Vertical uniformity and distribution.

(2) Continuity along bedding planes.

(3) Breakdown of oil saturation and feet of sand into various permeability ranges.

(4) Determination of minimum permeability that will be affected by secondary-recovery operations at the economic limit of production.

(5) Adaptability of producing formation to the use of selective plugging agents.

(6) Use of permeability determinations and profile to determine:

a. Input rates.

b. Well spacing.

c. Plant capacity, line sizes, water-storage facilities, etc.

d. Rate of return of investment.

e. Pumping or compressor-equipment capacity requirements.

f. Fill-up time of reservoir, prediction of injection rates, and life of project.

g. Possibility of flowing or pumping production.

h. Economic limit of produced water-oil or gas-oil ratio.

E. Residual-oil saturation after complete water drive, or after complete gas expansion, as determined by laboratory flooding and repressuring tests.

F. Surface-tension phenomena.

5. Reservoir Characteristics and Behavior

A. Initial and present bottom-hole pressures. Pressure-volume relations. Characteristics of production-decline curves.

B. Gas liberation and oil-shrinkage data at various pressures. Analysis of produced gas after treating. Deviation factors, either calculated or experimental.

C. Initial gas-oil ratios and accumulated gas-oil ratios. Gas-oil ratios at time of primary depletion.

D. Existence and extent of initial and present gas-cap zones. Indications of gas-cap expansion.

E. Extent and effectiveness of natural water encroachment.

F. Substantiation of existence of gas cap and water zone by electrical logs in case flushing of cores renders detection difficult.

G. Reservoir temperature.

H. Viscosity of oil under existing reservoir conditions of temperature, pressure, and gas in solution.

I. Character of oil: color, gravity, fluidity at low temperatures. Distillation test: Oil samples for analysis should be identified as follows: sample No., well No., lease, company, section, township, range, county, state, field,

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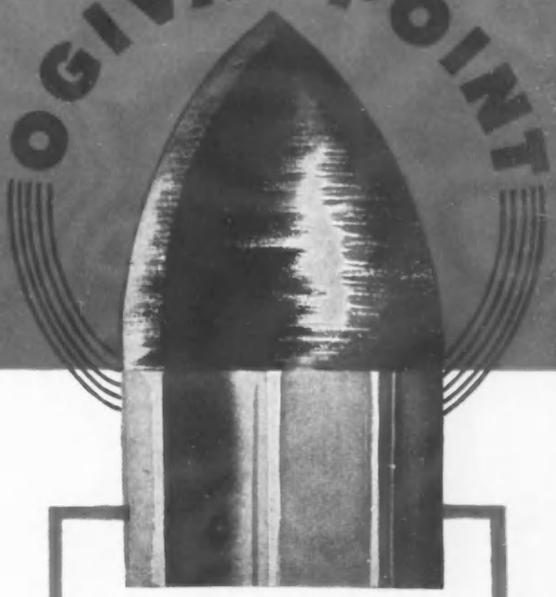
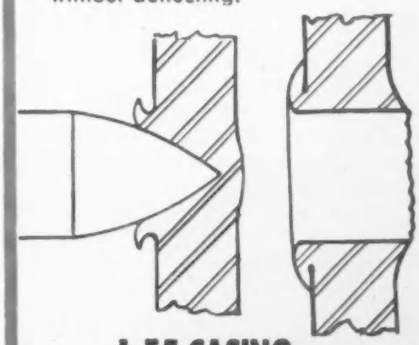


Say:

'OH — JIVE — AL'

The term "ogival" describes the pointed arch shape of the "Steelflo" Bullet. The extreme point is thicker and therefore stronger. The bullet velocity is increased by a longer effective barrel length. "Steelflo" perforates casing in a straight line without deflecting.



J-55 CASING

The metal displacement is uniform as the casing is perforated. The edges are rolled back into a tightly flattened bead.

Look to LANE-WELLS for Progress in GUN PERFORATION

date taken, point taken, depth of well, sand and depth of sand, and general remarks.

J. Chemical analysis of connate water: Water sample for analysis should be identified as follows: sample No., well No., lease, company, section, township, range, county, state, field, date taken, point taken, depth of well, source of water, and general remarks. The sample should be collected under conditions that preclude contact with air insofar as that is possible. If the water is from an oil zone, collection of the sample should be made from the lead line, and about 1 inch of crude oil should remain on top of the water in the sample container. Other samples of water should be protected by a layer of about 1 inch of neutral oil. Analysis for barium, sulfur compounds, and the bicarbonate radical should be made as soon as possible. Observation in the field should be made whether the water is corrosive to casing, tubing, and other production equipment, and whether an odor of hydrogen sulfide is present.

K. Tendency of crude to emulsify or oxidize.

L. Presence of thief formations immediately above or below the oil-bearing formation.

6. Production Data

A. Total present daily oil production. Number of wells, present productive acres. Individual lease and well daily oil- and water-production figures.

B. Potential tests of oil and water production and method of obtaining same. Production records of typical large, medium, and small wells, including date drilled, initial production, pressure, present oil and water production, and date of abandonment. Influence of gas production, variations in sand conditions, and location near center or edge of field on initial production, total production, and life of wells. Reasons for any dry holes in field.

C. Gas-production history of field from strictly gas-bearing formations:
   (1) Number of producing gas wells.
   (2) Total present open-flow capacity.
   (3) Average present rock pressure.
   (4) Average gathering-line pressure.
   (5) Average main-line pressure.
   (6) Average age of gas wells.
   (7) Original rock pressure.
   (8) Original open-flow capacity.
   (9) Total gas production by convenient time periods.
   (10) Cumulative gas production.
   (11) Estimated gas reserves, with particular attention to gas available for secondary-recovery operations.

D. Water production of field, individual leases, and wells. Methods employed for disposal of water. Determination of source of water either from leaking casing, improperly abandoned wells, or from same horizon producing oil.

E. Response of field to vacuum. Amount of vacuum applied and period of application. Operation of gasoline-recovery plants in connection with vacuum. Effect of vacuum on gravity of oil. Average gasoline recovery from casinghead gas. Type of gasoline extraction used. Disposition of stripped gas.

F. Results of any secondary-recovery operations:
   (1) Water flooding. Well spacing, intake pressure, volume of water input, production, recovery results, duration of operations in area affected. Accidental or intentional nature of water floods.
   (2) Gas and air repressuring. Well spacing, intake pressures, intake volumes, production, ratio of injected gas to oil produced, produced gas-oil ratio, recovery results, duration of operations, area affected. Effect of air on quality of oil.

G. Estimated remaining primary reserves of field.

H. Estimated secondary reserves of field, based on results obtained from existing projects or from core-analyses data.

7. Development Practice in Field

A. Drilling: cable tools or rotary. Type of rig used. Special difficulties encountered in drilling.

B. Average well spacing.

C. Size of hole drilled. Drilling cost.

D. Complete casing record. Sizes used, average amount used, average amount pulled, average amount left in wells, and present condition. Note age and condition of reclaimed pipe.

E. Cementing practice.

F. Use of explosives in well completion. Quantity and type of explosive used, placement of shots in reference to top and bottom of sand and in relation to pay sections, size of shells used, and average cleanout time required. Were tamped shots used, and if so what was the type of tamping? Number of wells shot and general results of shooting.

G. Acid treatment in well completion. Quantity and type of acid used. Method of placing either through packer on tubing or in open hole. Amount of oil used for tamp and washing-out of spent acid. Number of wells acidized and general results of acidization.

H. Gun perforation of casing. Average number of shots and number of shots per foot. Section of pay zone generally perforated. Comparison of initial productions from gun-perforated wells and wells completed with open hole below casing or with perforated liner and screen.

I. Amount and size of tubing used.

J. Liners and screens used.

K. Gravel packing.

8. Operating Practice in Field

A. Subsurface equipment in pumping wells. Anchor, working barrel, flood nipple, cups, balls and seats, rods, and production packers.

B. Surface equipment for pumping wells. Pumping jacks, derricks or gin poles, receiving tanks, gas lines, oil lines, well-head connections, pull rods or pull lines, and central powers. Oil-storage facilities. Condition of equipment.

C. Pumping frequency. Time required to pump off. Estimated lifting costs.

D. Gas-lift installations. Type, pressure employed, and cost of operation.

E. Turbine or hydraulic pumps. Comparison of results with conventional pumping equipment. Cost of operation.

F. Method of separation of oil and water. Treatment of emulsions.

G. Average total cost of surface-well equipment.

H. Common operating troubles:
   (1) Paraffin and basic sediment.
   (2) Mineral deposition on sand, casing, and tubing, and any salting-up of wells.
   (3) Casing and tubing leaks.
   (4) Corrosion of equipment.
   (5) Excessive wear and parting of rods.
   (6) Abrasion of working barrel by floating sand.
   (7) Accumulation of cavings and muck in bottom of hole.

I. Cleanout procedure. Method employed, size of shot used, time required, average cost, and general results.

J. Estimated increase in production by general rehabilitation of wells and equipment.

K. Possibilities for rehabilitation of abandoned wells.

9. Water Supply for Water-Flooding Operations

A. Surface supply. Name and location of streams. Proximity to site of operations. Approximate area of water

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The pioneering talent and engineering *know-how* that gave Kerotest Valves to the oil industry is at work today far afield—building better valves for cargo carriers, and for Navy ships from destroyer-escorts to battleships.

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shed. Average annual rainfall in inches. Flow per second feet during various seasons of year. Turbidity of water during various seasons of year. Pollution, if any, of stream. Corrosive nature of water. Availability of dam sites. Prior use of water for domestic and industrial supply, for carrying sewage, for hydroelectric-power generation, or for irrigation.

B. Subsurface supply. Depth, thickness, and productive capacity of subsurface water-bearing formations. Turbidity of water. Production by artesian flow or by pumping. Effect of previous withdrawal of water on artesian pressure in flowing wells and on level of water table in pumping wells. Note all water-bearing horizons encountered in drilling oil wells.

C. Water-sample data: Same as 5-J.

D. Water treatment required.

E. Mixing test of produced water and supply water.

F. Observation of rate of precipitation or increase in turbidity of subsurface sample taken without exposure to air.

G. Estimated cost of water-supply development.

10. Gas Supply for Gas Repressuring

A. Availability of gas in field: by production from lease, by purchase from adjacent leases, or by purchases from gas company. Amount of gas presently sold from field, company selling gas, and selling price.

B. Availability of gas outside of field:
   (1) Ownership of gas.
   (2) Purchaser of gas.
   (3) Price paid per MCF.
   (4) Pressure base.
   (5) Adequacy of supply for repressuring.
   (6) Availability of any distress gas.
   (7) Proximity to pipe lines.
   (8) Amount of line required to make connection.
   (9) Gathering-line pressures.
   (10) Main-line pressure.
   (11) Average closed-in rock pressure.
   (12) Date of completion of wells.
   (13) Maximum, minimum, and average open-flow capacity of wells.
   (14) Age of wells.
   (15) Original rock pressure at all sources.
   (16) Recent production from wells.
   (17) Estimated reserves available.
   (18) Compressor facilities required.

11. Economic Considerations

A. Effect of topography on development cost, including effect on roads, pipe lines, pumping equipment, well depth, etc.

B. Accessibility: nearness to railroads, navigable streams, and highways.

C. Availability and cost of electric power.

D. State and pipe-line proration practices. Well allowables.

E. State laws and regulations governing secondary-recovery operations. Restrictions on federal or Indian lands. Protection of coal beds and other mineral deposits.

F. Probable productive acreage available for secondary-recovery operations and cost. Existing lease terms. Possibilities for unitization of royalty interests. Willingness of operators to unitize and cooperate in secondary-recovery development, method generally favored for field, and ability of all operators to contribute proportionate share of cost.

G. Adverse lease claims.

H. Production, excise, and ad-valorem taxes.

I. Possible damage claims.

J. Separation of deep rights from shallow rights.

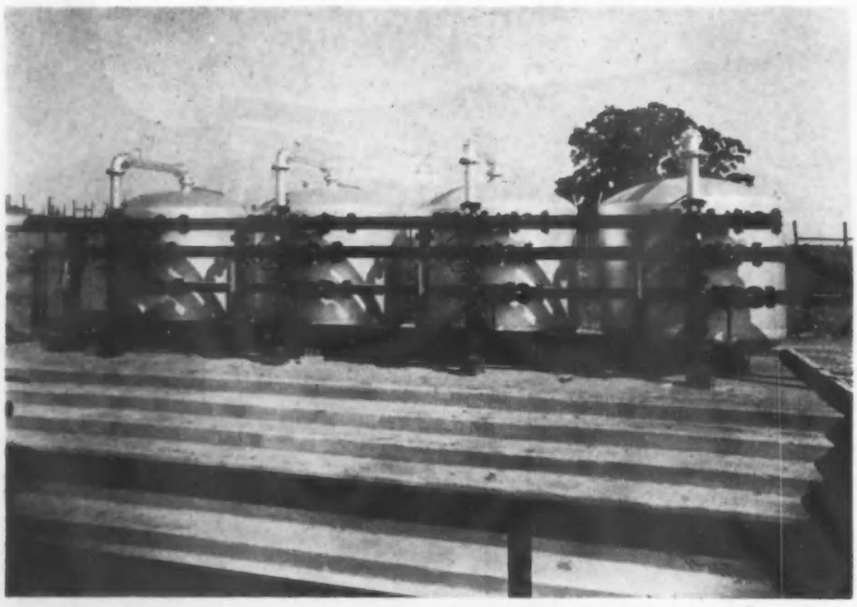
K. Availability of labor and wage scales. Nearness to supply houses.

L. Adaptability of existing wells to secondary-recovery operations. Adaptability of secondary-recovery well-spacing pattern to lease boundary lines.

M. Markets for oil:
   (1) Grade of oil.
   (2) Pipe-line facilities. Condition and ownership of same.
   (3) Condition of main storage tanks.
   (4) Frequency with which oil is run.
   (5) Ultimate purchaser of crude.
   (6) Desirability of crude.
   (7) Location and capacity of refinery connections.
   (8) Outlook for future market for oil.
   (9) Current price paid for crude and any premium.
   (10) Trasportation of oil by tank cars or tank trucks.
   (11) Differences in transportation facilities during various seasons of year.

12. Summary

A. Investigator's comments regarding the most applicable secondary-recovery method, probable secondary reserves, and desirability of further investigation and core-testing the producing formation.



A battery of four pressure sand filters on the Bryan W. Payne salt-water-disposal plant in the Chism survey, Gregg County, west of Kilgore. Each filter has capacity of 4500 barrels daily. Water passes through these filters before being injected into the disposal well.

Part II—Analysis of Field Information and Discussion of Criteria Determining the Probability of Success of Secondary-Recovery Operations

Part II of this paper will consist of a number of sections dealing with such matters as injection pressures, geologic factors, permeability, total saturation, core analysis, viscosity, theoretical calculations, surface tension, electrolytic models, economic factors, etc. For preprint purposes, it is proposed to issue each section separately.

BIBLIOGRAPHY

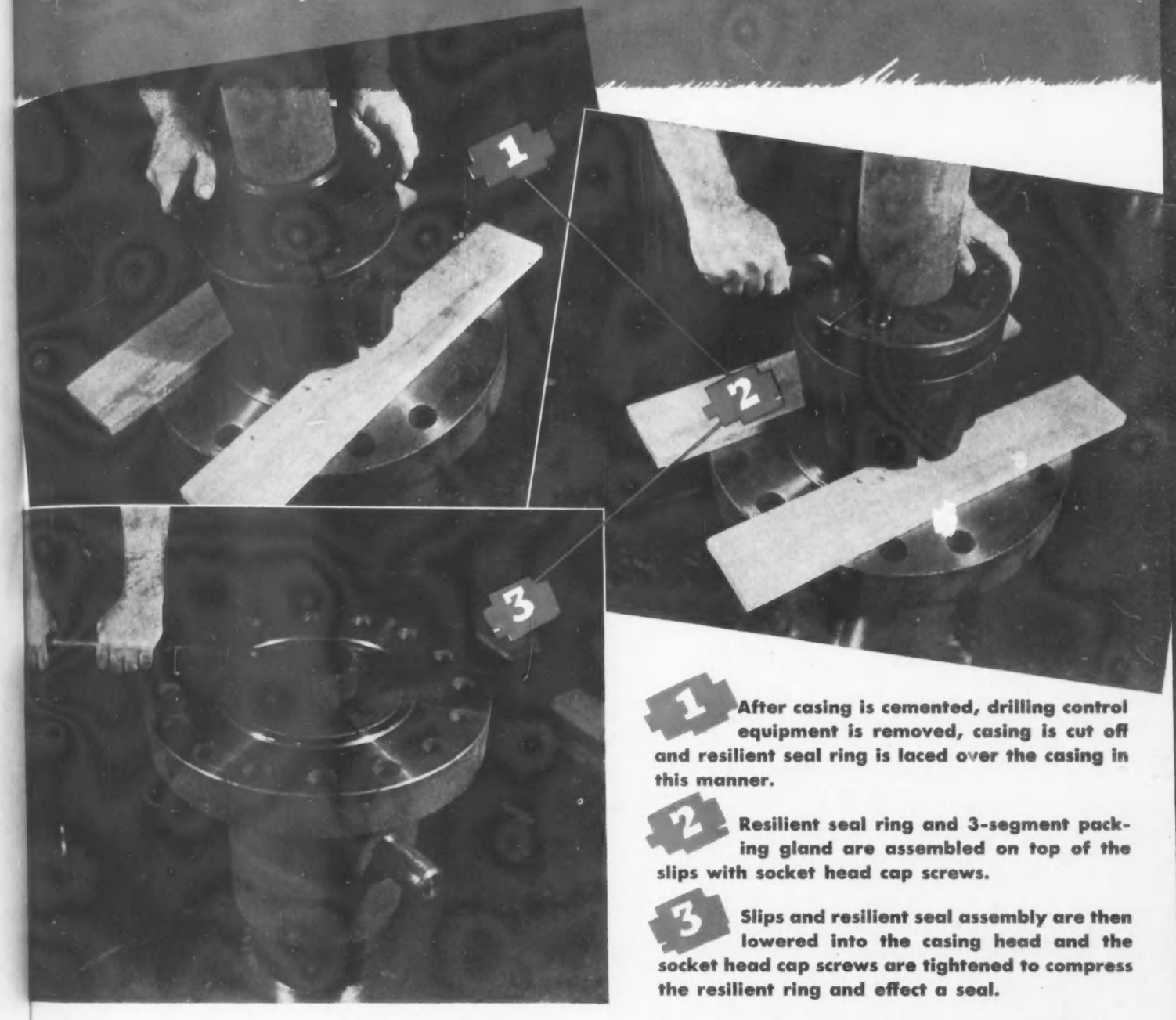
[1] Paul D. Torrey, "Determining an Oil Field's Possibilities for Secondary Recovery," *Petroleum Engr.* 8 [4] 65-71 (1937).

[2] Parke A. Dickey, personal communication.

[3] William L. Horner, "Controlling and Predetermining Secondary Recovery," Chap. 5 of *Secondary Recovery of Oil in the United States*, 37-47, American Petroleum Institute, New York (1942).

HERE'S HOW THEY'RE SEALING HARD-TO-WELD CASING WITH

CAMERON *Resilient Seal* CASING HEADS



1 **After casing is cemented, drilling control equipment is removed, casing is cut off and resilient seal ring is laced over the casing in this manner.**

2 **Resilient seal ring and 3-segment packing gland are assembled on top of the slips with socket head cap screws.**

3 **Slips and resilient seal assembly are then lowered into the casing head and the socket head cap screws are tightened to compress the resilient ring and effect a seal.**

Where hard-to-weld casing makes field welding impractical, many operators have found the answer to their casing seal question in Cameron's Type "W" Resilient Seal Casing Head. The above sequence of operations clearly illustrates the simplicity as well as the sound mechanical design of this well head. There are no threads on the inside diameter of the casing head to be damaged by drilling tools, an undesirable feature of most heads of this general design. The bolted type packing gland permits higher compression in the packing than is possible to obtain with a screwed type gland.

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PRACTICAL OPERATING *Hints* FOR THE DRILLING RIG

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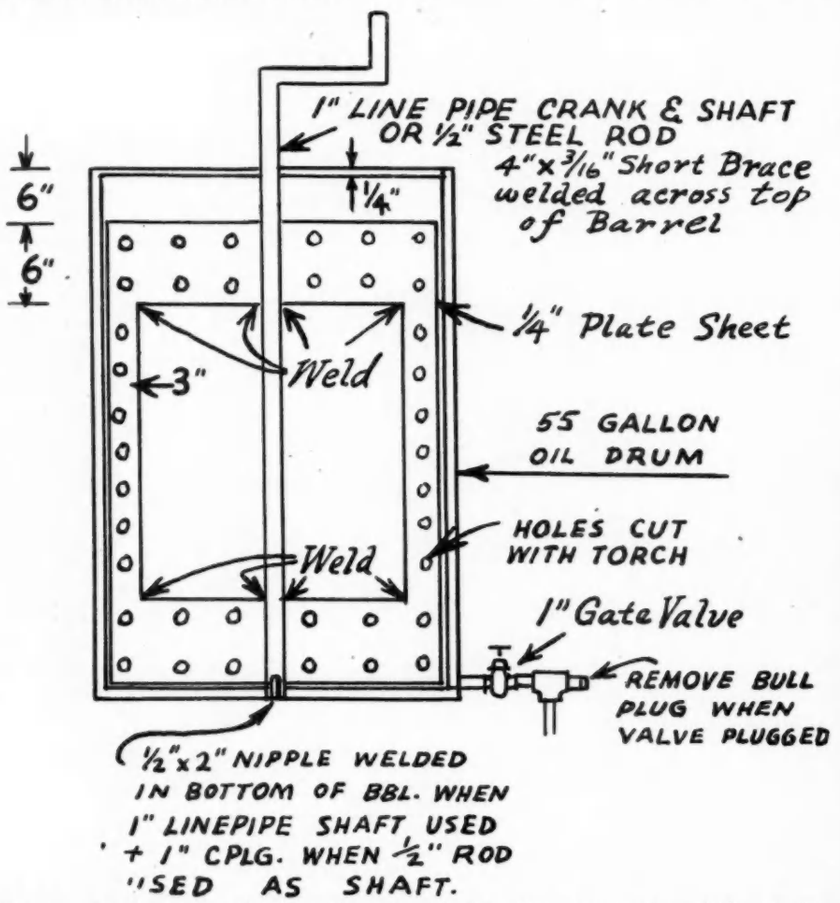
1. MUD MIXING

Converted Oil Drum Aids Chemical Feed


1" LINE PIPE CRANK & SHAFT OR ½" STEEL ROD
4"x 3/16" Short Brace welded across top of Barrel
6"
6"
¼"
¼" Plate Sheet
3"
Weld
55 GALLON OIL DRUM
HOLES CUT WITH TORCH
Weld
1" Gate Valve
REMOVE BULL PLUG WHEN VALVE PLUGGED
½"x 2" NIPPLE WELDED IN BOTTOM OF BBL. WHEN 1" LINEPIPE SHAFT USED + 1" CPLG. WHEN ½" ROD USED AS SHAFT.

Diagrammatic sketch of quebracho mixing unit with dimensions necessary for quickly reproducing—paddle, rod and other interior fittings may be changed to afford greater clearance if desired.

BY MAKING a few changes, a 55-gallon oil drum may be converted into a very effective mixer for quebracho or other materials which must be incorporated in the mud stream at a uniform rate and in relatively small amounts.

The paddle or mixing unit is formed from ¼-inch plate, cut to fit fairly closely within the diameter of the drum, and with swash holes burned at intervals through the plate with the torch. The entire central section of the plate is cut out, so that the liquid stirred by the edges may pass through the center and there mix.

The paddle is suspended on a crank and shaft, formed from 1-inch pipe or ½-inch rod, bent to shape and welded to the paddle on both sides of the central aperture. A centering rest is provided in the bottom of the drum, while a light cross member of 3/16 x 4-inch strap at the top carries the upper end of the device.

A 1-inch outlet line is welded near the bottom of the drum, with a Tee outside the control valve. The Tee is bull-plugged on the run, with normal delivery through the side outlet. If the valve clogs, the plug may be removed and a rod or wire used to open the valve passages.

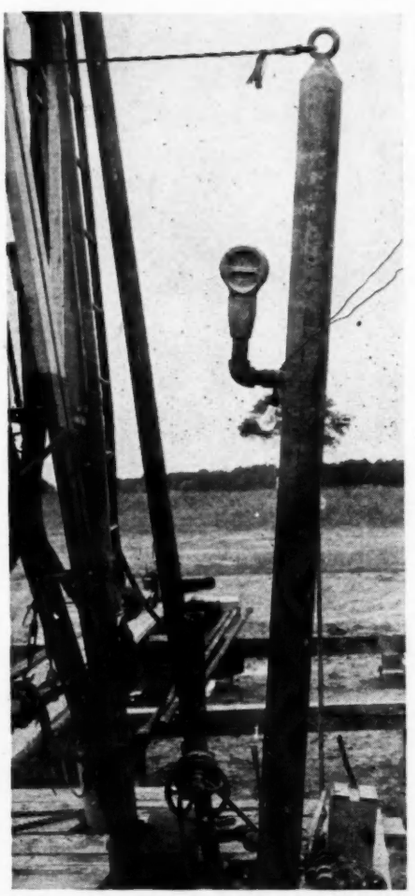
To protect the drain pipe, it may be disconnected at the gate valve to prevent damage against other units while on the move between wells.

2. OPERATING

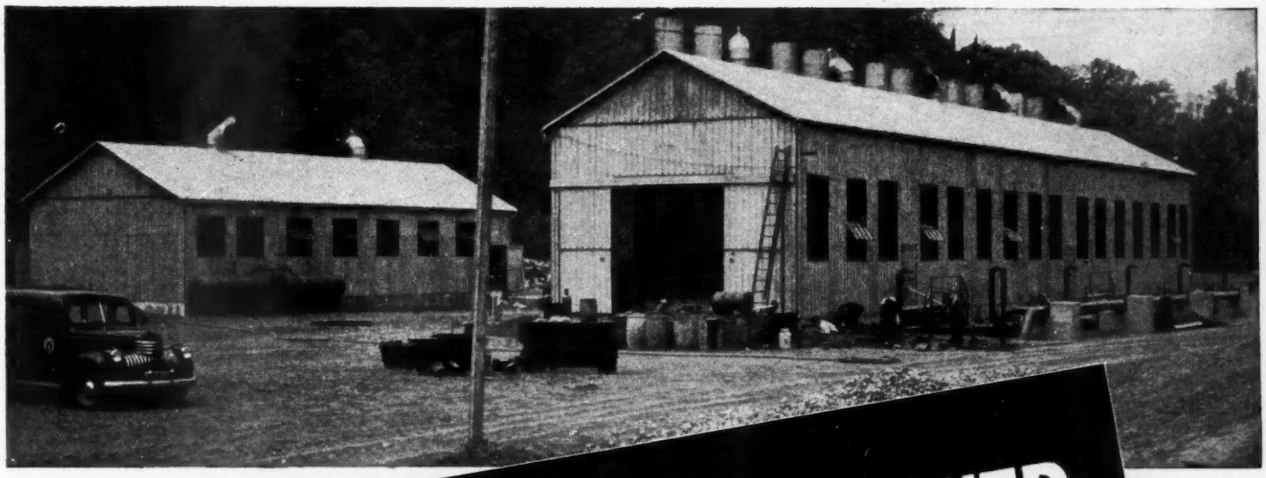
Shock Absorber Protects Standpipe

AN AIR chamber, set at or near the tie-in of mud line to riser in the derrick, absorbs much of the pulsation in the mud stream, and adds but little to the weight of the piping system. One contractor obtains dual service from this unit by mounting it outside the derrick, and by cutting in a side outlet some two-thirds of the way up the cylinder. It is necessary only to insure that this opening be below the liquid-air interface at working pressures.

This outlet is used to carry the mud-pressure gauge, the dial being faced so as to be readily visible from the driller's



Mud-pressure gauge mounting on offset from air chamber prevents pump pulsation variations.



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In other branches of the oil industry also, service records of Butler Built Steel Buildings date back more than 30 years. Factory fabricated for speedy, bolt-together erection, they lessen the overall investment. *Structurally strong, fire-safe, readily insulated, heated or air-conditioned*—they permanently house space for practically every type of operation. Their section-unit design makes them easily adaptable not only to present needs, but also to changing needs later.

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stand. Since the tie-in for the gauge lies within the liquid column, fluctuations in height due to pump pulsations do not affect nor reach the gauge mechanism, and readings shown are those of the fluid in the derrick riser.

Placing the gauge outside the derrick aids in protecting it from accidental damage, and enables it to be illuminated as desired.

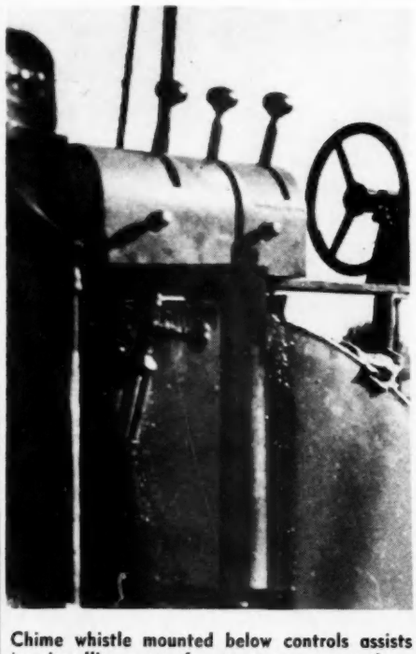
The air chamber on this rig is set with an inclination outwards from the derrick, and upper end is restrained from further swing away from the vertical only by a short line. This flexible tie permits the shock absorber to vibrate with pump pulsations without striking against the derrick, and with minimum strain on the fittings.

To protect the tie-in on the high-pressure mud line, it is necessary that support be placed below the relatively heavy air chamber, to prevent damage to threads of Tee.

3. *SIGNALLING*

Air Whistle Speeds Crew Communications

ON RIGS where compressed air is provided for actuating auxiliary equipment, signalling crews is simplified if a small chime whistle be included with the other controls at the driller's stand. Code signals, prearranged combinations of long and short blasts, permit the crew to be notified of impending operations, no matter how much noise may be made by the equipment or how widely scattered at other tasks the men may be.

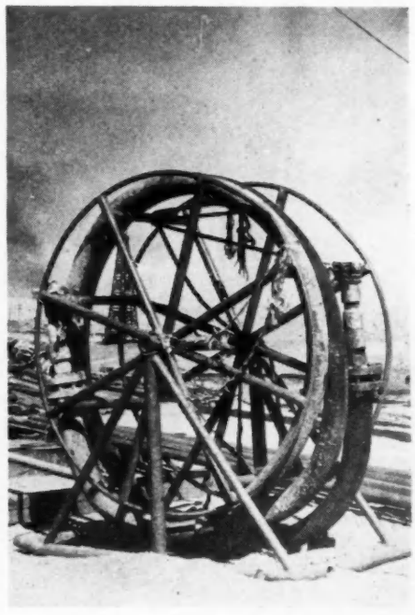


Chime whistle mounted below controls assists in signalling men for emergency operations.

The whistle is mounted at the stand, and with shut-off valve in addition to the usual whistle control, so that signals will be made only by the man authorized, and the device used only when required, so as not to impair its effectiveness in an emergency.

4. *HOSE CARE*

Welded Pipe Reel Protects Rotary Unit

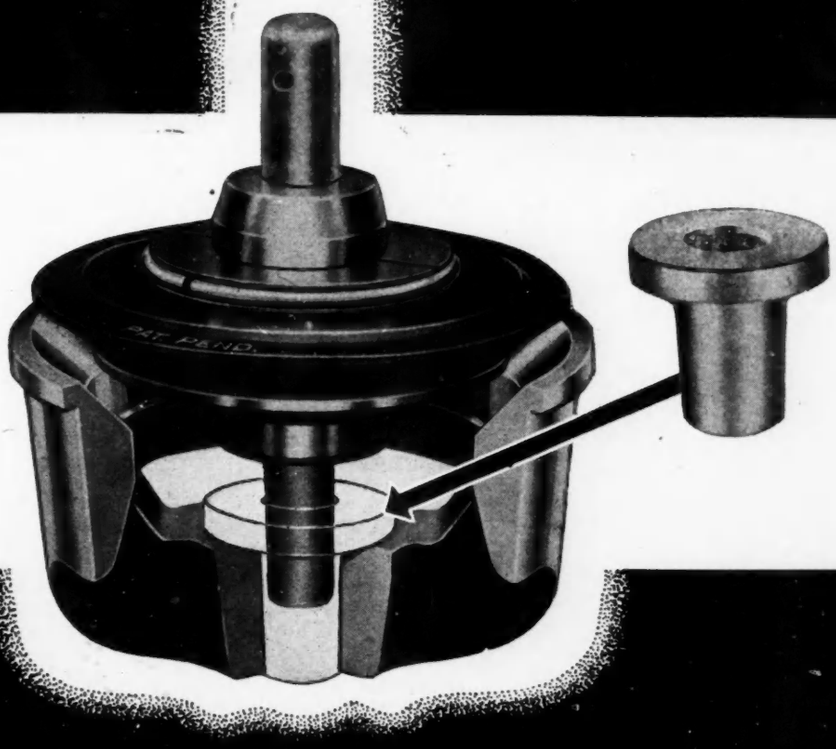


Inset cross members and elevated axle permit reeling of hose without contact with floor or ground.

HANDLING and storing of the rotary hose is simplified by providing some sort of rack or reel on which the hose may be placed when not strung up in the derrick. One drilling contractor utilizes junk pipe, scrapped sucker rod, and other odds and ends of salvage to make a sturdy reel, skid-mounted and provided with simple sleeve bearings, on which the hose may be wound when not in use. The skid and hose may be taken to the derrick floor for installation or rewinding, and the hose handled with the derrick line so as to prevent the dragging through the dirt and over sharp edges which so often characterizes the moving of the hose between truck and rig.

The reel is elevated above the footing of the skid sufficiently to provide the necessary clearance for the relatively slow bend formed at either end of the hose by the coupling mandrels, with the sucker-rod rims extending far enough beyond the transverse winding bars to protect the hose from material stacked alongside.

MISSION VALVES *save materials*



important in total war . . . money-saving any time

THE MISSION principle of "Change the bushing and save the seat" saves vital war metal.

You save an 18-pound seat by changing a one-pound wear-taking bushing. Or in terms of money, you save a seat costing $15 (Series 3. Other sizes in proportion) by merely replacing the worn bushing with a new one costing $1.75.

In many instances the life of Mission Valves has been extended 200% to 500% longer by the operator giving attention to replacing the wear-taking bushing at the proper times, thus saving critical war material.

Mission Compound-308 Valve Inserts save vital war rubber.

They last three to five times longer than regular inserts in ordinary mud, and up to ten times longer than regular oil-resisting inserts in hot mud, treated mud, or oil and gas.

GUARANTEE { **If a competitive test in your pumps does not prove that Mission Slush Pump Valves (with Compound-308 inserts) are more economical than the valves you are now using, the entire purchase price of these valves will be promptly refunded.** }

CHANGE THE BUSHING
AND SAVE THE SEAT

MISSION
MANUFACTURING CO.
HUMBLE ROAD, HOUSTON, TEXAS
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More Wildcat Wells Drilled In Far Below Requirements

By DON L. CARROLL, Staff Writer

ALTHOUGH October wildcat completions were up more than 17 percent in number over September, discovery results continued generally poor throughout most of the country. This trend proves that no matter how great the need for sensational discoveries, the laws of nature prevail in spite of government goals and directives; and that it is not the number of wildcats drilled but the results of these tests that actually count.

More important discoveries of the month were of comparatively small stature, and deserve mention only as contrasts with lesser finds in other localities. In Illinois, 17 out of 45 wildcat wells were brought in successfully; in Texas, 17 out of 73; California, 4 out of 25; and Oklahoma, 5 producers from 40 completions.

During ten months of 1943, 2754 wildcat wells have been drilled, 104 more than were put down in the same period last year, but far short of the 3700 expected for the period by PAW when that agency assigned a schedule of 4500 wildcats in 1943.

While wildcat completions are 100 above the number drilled up to the same date last year, there has been a net decline of 2.3 percent in productive completions, to 14.7 percent. Of the 324 wildcats completed in October, 55 were productive, or an average of slightly less than 13.9 percent, which is below the average for the year. In the oil-discovery column North Texas had 3 pool discoveries and 1 new pay; the Lower Texas Gulf Coast the same; Kansas had 4 new pools and 1 new pay; Illinois 2 new pools, 4 pays, and 11 extensions; Oklahoma, 3 pools; and California, 1 new pool, 2 pays, and 1 extension. Results in other areas were not significant, from the standpoint of activity.

Illinois had 11 of the 13 oil field extensions of the month, 4 of the 14 new oil pays, and 2 of the 20 new pools—a total of 17 oil discoveries. Texas recorded 14 oil discoveries during the month.

October wildcatting accomplished the discovery of only 1 new distillate field and 1 new distillate pay, 4 new gas fields, 1 gas pay and 1 extension. The total of 55 October discoveries of all types is only one less than in September, although that month had 6 more oil discoveries.

Important Strikes

W. L. Pickens' Cramer 1, 1½ miles southeast of the Mauritz field, in Jackson County, Texas, opened the Little Kentucky field, flowing 139 barrels of 35.6-gravity oil from 6 feet of saturation in the Frio sand, topped at 5700 feet. This find adds another producing area that is typical of the locality, where production is found in small noses that outline a large anticlinal uplift, where the main structure is apparently barren. The shallow depth of the pool-opener indicates rapid development of the field, which should prove out at least 4,000,000 barrels of reserves.

The first oil discovered in King County, Texas, has been opened on the Bateman ranch, 6½ miles east of Guthrie, by Humble Oil & Refining Company's Bateman Trust 1, which topped Pennsylvanian limestone pay at 3688 feet, and flowed 361 barrels, with 161-to-1 gas ratio, through ⅜-inch choke. It was acidized with 4000 gallons. The company has a lease block of more than 37,000 acres, comprising the area of the Bateman Ranch. This discovery is expected to be followed by others along the east-west trend of the anticlinal structure that extends across the county.

Wildcat Summary for 1943 and 1942

	FIRST 10 MONTHS	
	1942	1943
Oil Discoveries:		
New Fields	253	221
New Pays	138	107
Total	391	328
Distillate Discoveries:		
New Fields	13	15
New Pays	2	5
Total	15	20
Gas Discoveries:		
New Fields	36	45
New Pays	8	11
Total	44	56
Total Discoveries:	450	404
Unproductive Wildcats	2,200	2,350
Total Strict Wildcats	2,650	2,754
Percent Productive	17.0	14.7
Percent Dry	83.0	85.3

Humble Pipe Line Company's Panhandle-Ranger line crosses the eastern part of King County, assuring an outlet. This strike extends the North Texas producing area westward, and is of importance for this reason. It is 24 miles from nearest production.

In the Upper Texas Gulf Coast, William Helis opened the only new field—in the South Devers area of Liberty County, finding 6 feet of saturation in the Frio sand below 7704 feet. The well flowed 92 barrels of low-gravity oil through 7/64-inch choke. The area has been intensively wildcatted for a number of years on a salt dome structure; but this is the first commercial discovery there.

Humble Oil & Refining Company's Slaughter 4-B, in the Hawkins field of Wood Count, East Texas, is the first well to produce from the Georgetown zone below the Woodbine sand. It came in flowing 76 barrels, but with gas-oil ratio of 4620 to 1, and is of further interest only because it may represent the tapping of a freak pay of migratory oil through a local fault in the Woodbine proper.

Wildcatting in Southwest Texas and the Lower Texas Gulf Coast is picking up noticeably, especially in the Rio Grande Valley counties, where many deep tests are in progress.

Illinois Strikes

In Illinois, Bell Brothers' Indiana National Bank 1 opened the Divide pool in Jefferson County, pumping 264 barrels from the McClosky lime, at 2723 feet. This marks another discovery along a high trend that is getting considerable attention and will be thoroughly prospected for local closures. The Pure Oil Company completed a good extension well in the Schnell pool, Richland County, topping the McClosky at 2973 feet for a 138-barrel yield on pump. This well is important because it establishes production within a mile of the prolific Noble pool, and may lead to a merging of the two pools. It extends the Schnell pool ¾ mile north.

California added one field discovery, one extension and two new pays, that

October But Results Continue To Maintain Reserves

add up to the equivalent of only a fraction of one major discovery. The possibilities of the new oil field are vague, since it was opened in the Huron area, Fresno County, where dogged exploration of a large area has yielded only spotty production from thin, lenticular pays in the Temblor series (Miocene). Offsets to good wells there are frequently dry, even on close spacing. One of the new pays looks better than most of the recent California discoveries—the Tulare sand, of Pliocene age, topped at 1200 feet in The Texas Company's Visalia 5, Midway-Sunset field, Kern County. The well made 38 barrels on pump, but if the new, shallow pay is extensive, it will aggregate a considerable addition to the field's reserves.

Lion Oil Refining Company opened a new field in Kansas on the first day of the month, with completion of Chitwood 1, in Pratt County. The well flowed 2672 barrels of 40-gravity oil, with no water, through a ¼-inch choke. It marks further expansion of producing territory along a broad, southward branch from the Central Kansas Uplift arch. It looks like a better-than-average discovery for the state. The pay is classified as a stratigraphic trap accumulation, the type of field that is supposed to represent the greatest hope for future adequate oil production, as soon as how to locate these traps by a method other than that of random drilling and core-drilling exploration has been learned. The well is producing from the Simpson (Ordovician) sand, has a 3-foot pay, and is bottomed at 4399 feet.

In Colorado, Standard Oil Company of California has finally opened up its discovery well of the Rangely field, in Rio Blanco County. The well was completed in 1933 and shut in until now. It came in on flow at 200 barrels, producing from the Weber Quartzite (Pennsylvanian). It is described as having a 668-foot pay section below 5657 feet. The other wells in the field are all producing from the shallower Mancos shale. This field is being developed on a structure covering nearly a hundred square miles. So far, all the oil from Rangely wells has been going to Salt Lake City refineries by truck.

Results of Wildcatting in United States During October and to Date for Year

This report embraces approximately one full month's wildcatting, although not exact results for calendar month. It includes some wells completed in late September but omits some completed in late October.

State or District	OCTOBER														FIRST 10 MONTHS OF YEAR						
	PRODUCTIVE WELLS										Unproductive Tests			Total Wildcats	Total Wildcats 1943	Wildcats Except Extensions or Semi-Wildcat Tests					
	Oil Discoveries			Distillate Discoveries			Gas Discoveries									Total		Productive		Dry	
	Fields	New Pays	Extensions	Fields	New Pays	Extensions	Fields	New Pays	Extensions	Total	Wildcats	Semi-Wildcats	Total			1943	1942	1943	1942	1943	1942
Alabama	....	....	....	....	....	....	....	....	....	.....	.....	....	.....	.....	2	2	3	....	....	2	3
Arizona	....	....	....	....	....	....	....	....	....	.....	.....	....	.....	.....	4	4	2	....	....	4	2
Arkansas	....	....	....	....	....	....	....	....	....	.....	2	....	2	2	58	53	22	6	7	47	15
California	1	2	1	....	....	....	....	....	....	4	21	....	21	25	184	177	101	14	5	163	96
Colorado	....	....	....	....	....	....	....	....	....	.....	1	....	1	1	5	5	2	1	....	4	2
Florida	....	....	....	....	....	....	....	....	....	.....	.....	....	.....	.....	1	1	....	....	....	1	....
Georgia	....	....	....	....	....	....	....	....	....	.....	.....	....	.....	.....	1	1	2	....	....	1	2
Illinois	2	4	11	....	....	....	....	....	....	17	28	....	28	45	414	361	487	65	73	296	414
Indiana	....	....	....	....	....	....	....	....	....	.....	8	....	8	8	81	76	78	2	13	74	65
Kansas	4	1	....	....	....	....	....	....	....	5	43	....	43	48	397	390	303	49	43	341	260
Kentucky	....	....	....	....	....	....	....	....	....	.....	18	....	18	18	103	103	29	12	5	91	24
Louisiana	....	1	....	....	1	....	1	....	....	3	5	....	5	8	107	95	132	26	37	69	....
North Louisiana	....	1	....	....	....	....	1	....	....	2	5	....	5	7	67	61	63	7	7	54	56
South Louisiana	....	....	....	....	1	....	....	....	....	1	....	....	....	1	40	34	69	19	30	15	39
Michigan	1	....	....	....	....	....	1	....	....	2	23	....	23	25	192	182	153	23	16	159	137
Mississippi	....	....	....	....	....	....	....	....	....	.....	1	....	1	1	21	21	32	1	....	20	32
Missouri	....	....	....	....	....	....	....	....	....	.....	1	....	1	1	21	21	17	3	....	18	17
Montana	1	....	....	....	....	....	....	....	....	1	4	....	4	5	21	20	6	5	3	15	3
Nebraska	....	....	....	....	....	....	....	....	....	.....	.....	....	.....	.....	....	....	13	....	....	....	13
New Mexico	....	....	....	....	....	....	....	....	....	.....	4	....	4	4	48	47	38	5	7	42	31
Oklahoma	3	....	....	....	....	....	2	....	....	5	35	....	35	40	279	271	259	39	59	232	200
Tennessee	....	....	....	....	....	....	....	....	....	.....	.....	....	.....	.....	1	1	5	....	....	1	5
Texas	8	6	....	1	....	....	....	1	1	17	73	....	73	90	957	910	955	148	177	762	778
E. Tex. Bor. Co.'s.	....	....	....	....	....	....	....	....	1	1	.....	....	.....	1	6	3	3	....	1	3	2
Rest of E. Texas	....	1	....	....	....	....	....	....	....	1	6	....	6	7	80	79	84	8	7	71	77
North Texas	3	1	....	....	....	....	....	1	....	5	11	....	11	16	239	236	200	51	35	185	165
W. Central Texas	....	1	....	....	....	....	....	....	....	1	10	....	10	11	109	107	125	13	24	94	101
West Texas	1	1	....	....	....	....	....	....	....	2	8	....	8	10	80	78	122	17	22	61	100
Texas Panhandle	....	....	....	....	....	....	....	....	....	.....	.....	....	.....	.....	3	3	3	....	1	3	2
Gulf Coast, Upper	1	....	....	....	....	....	....	....	....	1	8	....	8	9	95	86	95	13	25	73	70
Gulf Coast, Lower	3	1	....	1	....	....	....	....	....	5	15	....	15	20	171	153	142	30	44	123	98
Southwest Texas	....	1	....	....	....	....	....	....	....	1	9	....	9	10	132	124	133	16	15	108	118
South Central Texas	....	....	....	....	....	....	....	....	....	.....	6	....	6	6	42	41	48	....	3	41	45
Wyoming	....	....	1	....	....	....	....	....	....	1	2	....	2	3	19	13	11	5	5	8	6
Total U.S.	20	14	13	1	1	....	4	1	1	55	269	....	269	324	2,916	2,754	2,650	404	450	2,350	2,200
Total Last Month	26	7	11	2	.....	1	6	2	1	56	219	1	220	276	....	....	....	....	....	....	....
Jan.-Oct., 1943	221	107	113	15	5	3	45	11	10	531 †404	2,350	36	2,386 †2,350	2,916 †2,754	2,916	2,754	....	404	....	2,350	....
Jan.-Oct., 1942	253	138	*	13	2	*	36	8	*	†450	2,200	*	†2,200	†2,650	*	....	2,650	....	450	....	2,200
Percent Change	—12.6	—22.5	....	+15.4	+150.0	....	+25.0	37.5	....	†—10.2	+6.8	....	†+6.8	†+3.9	....	+3.9	....	—10.2	....	+6.8	....

* Data on semi-wildcats not available for 1942. †Exclusive of semi-wildcats or extension tests.

Discovery Wells of New Oil and Gas Fields, New Pay Horizons, and Field Extension Areas in the United States During October, 1943

NEW OIL AND GAS FIELDS AND NEW PAY HORIZONS DISCOVERED IN THE UNITED STATES

(This report embraces approximately one full month's discoveries. It includes some wells completed in late September)

County	Field	COMPANY, WELL AND LOCATION	Date Spudded	Date Completed	Total Depth (Feet)	Completion Horizon (Feet)	[1]Name, Character, and Age of Producing Formation	[2]Initial Production, Method, and Choke	Gravity of Oil	[3]Structure; [4]Method of Discovery	Preliminary Estimates of Reserves Found; Remarks
		CALIFORNIA—New Oil Field									
Fresno	Huron	General Petroleum Corp.'s Burrel 68-35 se sw se 35-16-18, 3¼ mi north in Riverdale field.	9-21-43	10-27-43	6660 pb 6507	6484- 6496	Temblor sand, Miocene	F 324; 13/64"	31.7	Geop.	Probably not more than 5000 barrels per acre.
		CALIFORNIA—Oil Field Extension									
Fresno	Helm	General Petroleum Corp.'s Noble F-4-5- sw sw sw 5-17-18, 1 mi from production.	8-19-43	10-21-43	8092 pb 8026	8025- 8005 7985- 7923 7908- 7904	Sand, Eocene	F 255; 11/64"	59.9	Geop.	Recovery likely not high.
		CALIFORNIA—New Oil Pays									
Kern	Midway-Sunset	Texas Co.'s Visalia 5, sw nw sw 12-31-22 Belgian Anticline area	9-20-43	10-15-43	1774 pb 1320	1200- 1320	Tulare sand, Pleiocene	P 38	13.4	Anti.; Geol.	Probably half-section at most involved.
Ventura	Eureka Canyon	El Rika Oil Co.'s 6100 ft e well 53-34-18	9-22-43	10-23-43	386			P 3		Geol.	Little importance.
		COLORADO—New Oil Pay									
Rio Blanco	Rangely	Standard of California's Raven 1 C nw se 30, 2n-102w		1933	7173	668	Weber quartzitic ss, Pennsylvanian	F 200	33.0	Anti. dome; Sur. Geol.	This deep-pay discovery completed and shut in 10 yrs. ago; now reopened and important development in prospect as structure covers 96 sq. mi. with good closure. Fld's dev. heretofore confined to Mancos shale shallow pay.
		ILLINOIS—New Oil Fields									
Effingham	Hill	Williams-Bushue 1, sw nw, 16-6n-6e, 3¾ mi ne of Mason pool	9- 2-43	10- 5-43	2653	2564- 2568 2570- 2572	McClosky li Miss.	P 245			Probably a small pool.
Jefferson	Divide	Bell Bros.'s Indiana Natl. Bank 1, E/2 ne ne, 24-1s-3e, 4½ mi w of Coil W. pool.	9-18-43	10-19-43	2881		McClosky li. Miss.	P 264			No indication of structural high.
		ILLINOIS—New Oil Pays									
Clay	Kenner	Williams' Green 4, c nw nw ne 30-3n-6e, 4½ mi w Flora	8-17-43	10-12-43	2845		Aux Vases sand Miss.	P 23			Probably unimportant. Pay zone 9 feet thick.
Gallatin	Inman East	Cherry & Kidd's Wright 2, se ne ne 15-8s-10e	9-24-43	10-19-43	2396		Hardinsburg, Miss.	P 200			Possibilities not known.
Hamilton	Blairsville	Texas' Drew Community 2, sw ne nw 20-4s-7e	9- 1-43	10-19-43	3310		Rosiclare, Miss.	P 428			Possibilities not known. Reported to have 7 ft. of pay.
White	Maunie North	Continental's Ackerman 2, c sw nw ne 25-5s-10e, 2 mi n of Maunie	8-24-43	10-12-43	2961		Aux Vases snd, Miss.	P 117			Aux Vases production probably spotty. Pay zone 12 ft. thick.
		ILLINOIS—Oil Field Extensions									
Edwards	Albion East	Superior's Ried 1, sw ne ne 29-2s-14w, 2 mi e Albion pool	9-26-43	11- 2-43	3233		Cypress snd. Miss.	P 34			New Pay. Small well.
Edwards	Albion	First Nat'l Petroleum's Brown 1, c s sw sw 6-2s-11e, ¾ mi w Albion.	8-29-43	10-19-48	3030		Aux Vases snd. Miss.	P 158			Extends Albion Aux Vases ½ mi.
Edwards	Albion	Superior's Earhart 1, nw se se 25-2s-10e, 3¾ mi s of Albion	9- 3-43	10-26-43	3233	2425- 2430 2415- 2420 3179- 3183	Waltersburg sand McClosky li., Miss.	P 152			Extends Albion pool 1½ mi.
Hamilton	Bungay	Ohio's York 1, sw sw sw 26-4s-7e	9-15-43	10-12-43	3320		Aux Vases snd., Miss.	F 452			Extends Aux Vases in Bungay pool 1 mi.
Jefferson	Mt. Vernon	Nash Redwine's Howard Casey 1, ne sw ne 6-3s-3e, 1¾ mi n Mt. Vernon pool.	9-25-43	11- 2-43	2808		McClosky li., Miss.	P 280			
Madison	Marine	Rockhill's Pence 1, 16-4n-6w, se ne ne, ¼ mi ne of Marine	8- 4-43	10-19-43	1767		Devonian li., Devo.	P 168			Extends Marine pool ½ mi.
Richland	Schnell	Pure's Haut 1, s½ sw 30-3n-9e, 2 mi s Noble	9-30-43	10-26-43	3075		McClosky li., Miss.	P 138			1 mi. of extension of Noble pool; pools may join.
Wayne	Barnhill	East Cities Service's Perry 1, sw 28-2s-9e, 8½ mi ne of Barnhill	8-19-43	10- 5-43	3378	3280- 3282 3290 3283- 3290 3252- 3256	Levias li., Miss.	F 174			New pay extending the Barnhill East pool ½ mi.
Wayne	Clay City Consolidated	Pure's Gray A-1, 34-2n-7e, nw nw se 3½ mi n of Cisne	9-30-43	10-19-43	2998		Aux Vases snd., Miss.	P 125			Extends pool ¾ mi.
Wayne	Clay City Consolidated	Washburn & Powers' Jordan 1, se nw 34-2n-7e, 3½ mi n Cisne	9-18-43	10-19-43	2977		Aux Vases snd., Miss.	P 230			Northwest Pure 's Gray A-1.
White	Maunie North	Skelly's Ramming 1, sw sw ne 24-5s-10e, 3 mi ne Epworth	8-26-43	10-12-43	3120		McClosky li., Miss.	P 7			Extends pool ½ mi.
		KANSAS—New Oil Fields									
Barton		Shirley Clum et al's Bahr 1, cn½ ne sw 26-18-15w		10-14-43	3506	3481- 3506		P 50	37	Anti; Random	Mediocre production of probable limited extent.
McPherson		Adair and Morton's Paden 1, swc se 10-18-1w		10-22-43	2770	2750- 2770	Miss. chat, Miss.	F 548		Anti; Trend	Favorable; needs development before evaluation.
Pratt		Lion Oil Refining Co.'s Chitwood 1, ne se nw 23-28-12w		10- 1-43	4493	4396- 4399	Simpson snd., Ord.	F 2,672; ¼"	40	Strat. Trap.; Drlg.	Probably exceed average of state in size.
Russell	So. Forest Hill	Appleman and National Refining Co.'s Kaufman 1, nwc sw 33-15-12w		10-19-43	3276	3065- 3273	Arbuckle dolo., Ord.	P 81		Anti.; Trend	
		KANSAS—New Oil Pay									
Pratt	Carmi	Ohio Oil Co.'s Honeyman 2, c sw sw 31-26-12w		10-28-43	3232	3228- 3232	Simpson snd., Penn.	F 21		Anti.	
		NORTH LOUISIANA—New Gas Field									
Lincoln Parish		Arkansas Louisiana Gas Co.'s Giles 1, 19-19n-2w, north of Ruston	9-20-43	10-25-43	5920	5878- 5896	Travis Peak	45.0 mil.	Gas		
		NORTH LOUISIANA—New Oil Pay									
Claiborne Parish	Homer	Frank and George Frankel's Muslow 1, nw nw ne 30-21n-7w	8-10-43	10-16-43	6015	4242- 4250	Cotton Valley	F 64.92; 2"	46.5		
		SOUTH LOUISIANA—New Distillate Pay									
Vermilion Parish	Pecan Island	Humble's Louisiana Furs 3, start common cor 10, 11 and 15-16s-1e, go s 61 deg 05 mins w 14,284 ft to loc in T-16s-1e.	6-28-43	10-16-43	11623	10279-10294	Miocene sand	F 43; 4/64"	Dist.	Anti.; Geop. & Drlg.	No appreciable addition to reserves.
		MONTANA—New Oil Field									
Pondera	Brady area	Texas Co.'s Schlepp 1, sec 21, 27n-2w, 8 mi sw Midway field		10-20-43	1725	12	Sunburst snd, Mesozoic	P 25	38.0	Shoreline lense, Trnd Drlg.	Further drilling necessary.
		MICHIGAN—New Oil Field									
Missaukee	Enterprise	Sun Oil Co.'s Wison 1, s½ se se 11-23n-5w, 6 mi s Norwich field	5-29-43	10-22-43	4595	4430- 4590	Richfield dolo., Dev.	F 32; 1/8"		Anti; Geol.	Richfield not important and Dundee dry. Small reserve indicated.

Mecosta...	Fork.....	**MICHIGAN—New Gas Field** American Production Co.'s Compson 2, c nw, 6-16n-7w, in Fork oil field.	9-20-43	10-20-43	1516	1490- 1510	Stray Sand, sdy li., Miss.	.274 mil.	Gas	Anti; Drlg.		
		OKLAHOMA—New Oil Fields		10-21-43	510	500- 510	Sand, Penn.	P 10	31	Trap	Unimportant.	
Comanche..		Northern Ordnance's Stephens "D"-1, se nw ne 29-3n-10w.....		10- 7-43	4429	4394- 4414	Hunton lime, Dev.	P & F 14			Unimportant.	
Noble.....		Barnsdall's Johnson 1, c sw ne 25-22-1e.....		10-19-43	5304	5118- 5130	Viola dolo., Ord.	P 51	38	Dome		
Pottawatomie		Cities Service's Lamirand 1, ne se sw 27-6n-2e.....						38.5 mil.	Gas	Dome; Seis.		
		OKLAHOMA—New Gas Fields		10- 7-43	3780	3631- 3630	Misener sand, Miss.	2.5 mil.	Gas			
Payne.....		Skelly's Simpson 1, swc se 30-19-5e.....		10- 9-43	2290	2068- 2134	Hartshorne sand				Attempting to complete also from Upper Pettit, producing level of other wells in area.	
Pittsburg..		Public Service Co.'s Berryman 1, sw ne se 2-6n-15e.....					Lower Pettit	F 100.0 mil.; $\frac{5}{8}$"	Gas			
		EAST TEXAS BORDER COUNTIES—Gas Field Extension	8- 5-43	10-15-43	6200	5955- 5968						
Panola.....	Carthage....	W. C. Feazel and N. V. Kensey's Jordan 1, A. Moorman survey, 1 mi e Carthage, 5 mi fr gas production.					Georgetown lime	F 76; $\frac{1}{4}$"	27.8	Dome; Drlg.	Not important.	
		EAST TEXAS —New Oil Pay	9-11-43	10-20-43	4631							
Wood.....	Hawkins.....	Humble's E. M. Slaughter 4-B, 1725 ft s and 175 ft w of m e ne cor M. A. Esparcia sur., adjacent to Woodbine oil production.					Cisco sand Penn.	P 65		Anti.; Geol.	Small pool with better than average sand thickness.	
		NORTH TEXAS—New Oil Fields	10- 1-43	10-24-43	885							
Archer.....		Hedrick Oil Co.'s C. E. Carter 1, 1320 ft nsl and 990 ft ewl sec 21, blk 5, Clark-Plumb sur, 1 mi fr production.					Lime, Penn.	F 361; $\frac{3}{8}$"	33.1	Anti.; Geol.	First in county. Single well reserve 40,000 to 60,000 bbls.	
King.....	Bateman Ranch.....		9-12-43	10-23-43	3702		Marble Falls sd, Penn.	F 75; $\frac{1}{64}$"		Anti.; Geol.	Single well reserve 60,0000 to 80,000 bbls. Bend and Mississippian zones have production possibilities in area. Worked over after temporarily abandoned in 1941.	
		Humble's Bateman Trust 1, 4204 ft nsl and 660 ft wel sec 101, blk A, J. B. Rector sur, 6½ mi e of Guthrie; 24 mi s of production.	1-12-43	10-23-43	4928 pb 4300							
Young.....	Fleming.....	Fleming Oil Co. and Fleming-Kinbell Corp's M. K. Graham 1, 467 ft out swc ne¼ sec 2912, TE&L Co. sur., 2¼ mi nw of production.					Ellenburger li., Ordo.	F 872; $\frac{3}{8}$"	43.0	Anti.; Geol.	Single well reserve 160,000 to 200,000 bbls.	
		NORTH TEXAS—New Oil Pay	9- 5-43	10-12-43	4973							
Archer.....	Taylor.....	J. A. McCarty and J. P. Coleman's W. H. Taylor 1-A, 330 ft out of nec lot 13, sec 17, ATNCL sur, ⅝ mi ne of small Mississippian producer.					Miss. li., Miss.	2.75 mil.	Gas	Anti.; Geol.	High-pressure gas. Originally completed 8-6-30 as gasser at 2900 ft.	
		NORTH TEXAS—New Gas Pay		10-25-43	4770							
Jack.....	Bryson.....	Brazos River Gas Co.'s D. C. Clayton 2, 2257 ft wel and 990 ft nsl of Jas. Matthews sur A-398.					Miss. li., Miss.	F 1320; 2"	44.0	Anti.; Geol.	Single well reserve 120,000 to 160,000 bbls. Ordinarily the production strikes from Mississippian in this general area are small.	
		WEST CENTRAL TEXAS—New Oil Pay	8-17-43	10- 5-43	4173							
Stephens...	Brown-Mississippi	Texas Pacific Coal & Oil Co.'s Mrs. Jessie Brown 1-C, 278 ft ewl and 3180 ft snl sec 114, BBB&C Ry. sur A-2773, within semi-depleted Bend lime pool and 1⅞ mi sw of nearest Mississippian production.					Permian sand, Perm.	P 10	36.0	Anti.; Geol.	Not important.	
		WEST TEXAS—New Oil Field	1-15-43	10- 6-43	1368							
Pecos.....		L. H. Choate and C. W. Brown's University 1-15, c nw nw sec 15, blk 20, 3¾ mi nw Taylor-Link field.					Lime, Permian	P 40	22.2	Anti.; Drlg.	Not important, and not officially classified as new pay until late October.	
		WEST TEXAS—New Oil Pay		8- 8-43	1857							
Pecos.....	White-Baker..	Cardinal Oil Co.'s White-Baker 4-C, 2395 ft nsl and 990 ft ewl T. C. Ry. sec. 44, blk Z, 100 ft below field's regular sand and highest on structure.					Frio sand, Olig.	F 92; $\frac{1}{64}$"	25.0	Deep seated dome; Geop. & Sub.	May add 1,000,000 barrels reserves.	
		UPPER TEXAS GULF COAST—New Oil Field	8-22-43	10-16-43	8205	7704- 7710						
Liberty....	South Devers.	William Helis's Hirsch Est. 1, T&NO 27, 7 mi. se Devers.....					Vicksburg sand, Olig.	F 55; $\frac{1}{32}$"	25.0	Anti; Sub. & Drlg.	Sand conditions none too good.	
		LOWER TEXAS GULF COAST—New Oil Fields	8-31-43	10- 1-43	4977	4953- 4976						
		Pure's Williams 1, 499 ft w, th 485 ft n fr se cor 198-ac. tr, Michael O'Donnell sur, 11 nw Refugio.	9- 8-43	10- 7-43	6850	5793- 5709	Frio sand, Olig.	F 139; $\frac{1}{64}$"	35.4	Anti. nosing; Sub. & Drlg.	Believed to be typical shallow field in area. May add up to 4,000,000 barrels reserves.	
Bee.....	Blanconia....	W. L. Pickens' Kramer 1, lot 10, Meyer, Foster & Knipling subdvn, Morris & Cummings sur 34, 1½ mi se Mauritz field.	4-14-43	9-20-43	8030	7462- 7468	Wilcox sand, Eoc.	F 31; $\frac{3}{16}$"	43.0	Anti.; Sub. & Geop.	Highly prospective from a Wilcox sand angle. May add 2,000,000 barrels reserves.	
Jackson....	Little Kentucky.....	Henderson Coquat's 1, 990 ft w thence 150 ft s fr n'ly ne cor J. Poitevent sur 1, 1½ mi se Goebel field.	9-18-43	10- 5-43	5526	5096- 5100 5110- 5114	Greta sand, Olig.	F 62; $\frac{1}{8}$" 72; $\frac{3}{8}$"	24.0 28.2	Flnk; Sub.	May add 500,000 barrels reserves.	
Live Oak...	Coquat.....	**LOWER TEXAS GULF COAST—New Oil Pay**										
Jackson....	Mayo.....	Louis Crouch's Vesley 2, 200-ac. lse, G. P. Aycock sur, dual completion.	6-15-43	7-28-43	7517	7390- 7398	Wilcox sand, Eoc.	F 3.0; $\frac{1}{4}$"	Gas spray Dist.	Anti.; Geop. & Drlg.	No estimate of reserves.	
		LOWER TEXAS GULF COAST—New Distillate Field	8-25-43	9-20-43	3913	3978						
Bee.....	Cosden.....	Petroleum's Freeland 1, 350-ac. tr, John Pace sur, 2 mi nw Pettus townsite.					Yegua sand, Eoc.	F 89; $\frac{3}{16}$"	45.8	Salt dome Flnk; Sub. & Drlg.	Probably adds 1,000,000 barrels to reserves.	
		SOUTHWEST TEXAS—New Oil Pay		10-19-43	5172	53						
Starr.....	Lockhart.....	Sun's McLean 4, 660 ft fr el & 10,000 ft fr sl 1252-ac tr, procion 79 & 80, Juan Casneras porcion 79, sw flank.					Sundance ss, Jurassic	P 200		Fltd Uplift	Extends production ¼ mi. s.	
		WYOMING—Oil Field Extension										
Fremont...	Steamboat Butte	British American Oil Prod. Co.'s Tribal 2-E, ne sw nw, sec 5-3n-1w. Northwest end of Pilot Butte uplift.										

[1] Ages of producing formations abbreviated as follows: Mio, Miocene; Olig, Oligocene; Plio, Pliocene; Eoc, Eocene; U. Cret, Upper Cretaceous; L. Cret, Lower Cretaceous; Jur, Jurassic; Tri, Triassic, Perm, Permian; Penn, Pennsylvanian; U. Miss, Upper Mississippian; L. Miss, Lower Mississippian; Miss, Mississippian; Dev, Devonian; Sil, Silurian; Ord, Ordovician; Cam, Cambrian. [2] Barrels of oil per day (24 hr. rate), flowing (F), pumping (P), swabbing (Sw), or bailing (B); or millions of cubic feet of gas daily, open flow capacity; size of choke given in inches. [3] Type structure abbreviated as follows: Ant, Anticline; Dome; Fold, Folded; Fltd, Faulted; Mono, Monocline; Nose; S. D., Salt Dome; Syn, Syncline; Ter, Terrace. [4] Method of discovery abbreviated as follows: C. D., Core Drilling; Dr, Drilling; Geol, Geology; Geop, Geophysics; Grav. met, Gravity Meter; Seis, Seismograph; Sub, Subsurface; Sur Surface Geology.

New Program of Federal Geological Survey Is Streamlined to Needs Of Oil Industry[1]

By HUGH D. MISER, Geologist in Charge Section, Geology of Fuels,
United States Department of the Interior, Geological Survey,
Washington, D. C.

THE September 13 issue of THE OIL WEEKLY carried a most timely article calling attention to the immediate needs of maximum aid on the part of research geologists, especially in publicly-supported organizations such as the federal and state geological surveys, in locating new oil reserves adequate for the needs of the war situation and the establishment of a safe margin to offset the depletion rate.

The United States Geological Survey is determined to extend itself in obtaining geological data that can be expected to lead to exploration of new areas.

Briefly, the program emphasizes the acquisition and immediate publication of information regarding the stratigraphy, paleontology, structure, changes in facies and porosity and thickness of producing formations, the margins of producing or possible producing zones, and the relations and extent of lenticular sands—from the standpoint of more complete understanding of regional geology. This fundamental regional work is regarded as basically necessary for the further delineation of local areas that may represent promising prospecting territory. In other words, we propose to supplement the work of oil geologists by providing results of careful and somewhat detailed regional studies as authoritative controls for more detailed local investigations such as they customarily pursue.

Regional Stratigraphy

The primary type of work to be undertaken, or already under way, is regional stratigraphy, with emphasis on both subsurface and surface studies.

The geologic data will be assembled in the form of maps, cross-section diagrams, or brief texts, and will be published with the greatest possible dispatch, through the facilities of the Geological Survey, the American Association of Petroleum Geologists, various state surveys, and local geological societies. In the interests of speedy publication, little attention will be given to the preparation of comprehensive reports at the present time. The determination of local features, whether by surface, subsurface, or geophysical methods, will in general receive little consideration.

Congress has appropriated $300,000 for initiating the investigations that have been outlined, and to finance them up to July 1, 1944. Parties have been organized and supervisors have been secured for projects now under way in California, the Rocky Mountain region, the Mid-Continent region, the Gulf Coastal Plain, and the Appalachian region. The special staff for these petroleum investigations now numbers approximately 100.

Field Headquarters

The projects are being directed through several field headquarters to reduceWashington supervision to a minimum. They will be located at Austin, Texas; Norman, Oklahoma; Lawrence and Wichita, Kansas; Denver, Colorado; Los Angeles, California; New Philadelphia, Ohio, and Ann Arbor, Michigan. Others will be established as field and laboratory studies require them for most effective effort. State survey and university facilities will be utilized as much as possible.

California projects include studies of: (1) The east border of the Los Angeles Basin, including the western part of the San Bernardino Valley and the eastern part of the San Gabriel Valley—from the standpoint of overlap possibilities in Miocene and Pliocene sediments. (2) Salinas Valley and adjoining areas—overlap possibilities, particularly in the Miocene of the eastern part of the valley. (3) Eocene stratigraphy of the San Joaquin Valley—to aid in correlation of the subsurface section of the valley. (4) Santa Maria Basin—overlap possibilities involving the greater part of the Tertiary.

In the Rocky Mountain region, studies include field and laboratory investigations incidental to the quick preparation of maps and stratigraphic sections of: (1) The marine sediments in the Pennsylvanian near Pecos and Albuquerque, New Mexico; (2) Northwestern New Mexico and northeastern Arizona; (3) Northwestern Colorado; (4) Eastern Colorado and parts of adjacent states; (5) Several of the structural basins of Wyoming.

In the Mid-Continent and Ozark regions, projects deal with: (1) The Forest City Basin area, of Iowa, Kansas, Nebraska, and Missouri; (2) The Salina Basin of Kansas; (3) The Arbuckle Ordovician rocks of Oklahoma and Kansas; and (4) Further Ellenburger possibilities of North Texas, as developed from studies of facies and siliceous residues, for closer correlation.

Gulf Coast projects involve: (1) Subsurface Comanchean stratigraphy; (2) Collaboration with the Mississippi Geological Society in preparation of geologic map of Mississippi; (3) Subsurface tracing of the Woodbine, Eagle Ford, and Tuscaloosa beds, all the way across to the Atlantic Coast.

In the Appalachian region, the first project concerns the further gas-producing possibilities of Mississippian rocks in eastern Ohio, Pennsylvania, and West Virginia.

In cooperation with the Tennessee Geological Survey, special subsurface studies will be made of the Paleozoic rocks, from the Mississippian down, utilizing 300 sets of well samples that are available.

In Michigan, the Devonian and older formations will be thoroughly studied in the subsurface, with the full cooperation of the Michigan Geological Survey and the University of Michigan.

Many of the large oil companies will release data to speed these projects along, and to make unnecessary the duplication of contributory work that has already been done. This recognition by the companies of the value of our war program is a most encouraging and healthy development, that can be expected to lead to a post-war continuation of closer professional collaboration in such broad and mutually beneficial studies.

[1]Published by permission of the Director of the Geological Survey, United States Department of the Interior.

HOW AND WHY

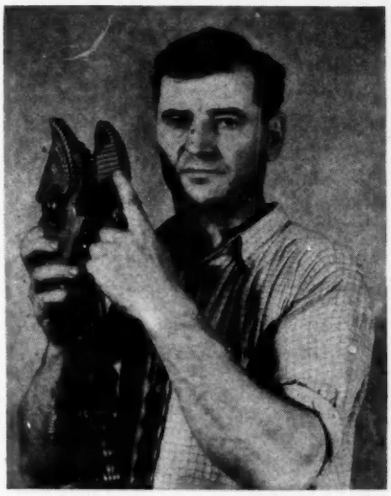
WILLIAMS' TOOLS AID WAR PRODUCTION

There are 2 types of Williams' Tongs, each offering certain advantages for particular classes of work. A knowledge of the features of these two types will enable users to better select the most efficient and economical type for the work at hand.

"VULCAN SUPERIOR" is a universal service tong for use on *both* pipe and fittings, without any change of parts or adjustments. Its reversible jaws provide *double* service life. When the teeth first in use wear, simply unscrew the bolt and turn the jaws end for end. Made in seven sizes for pipe and fittings 1/8" to 12".

"VULCAN". The original "Vulcan" Pipe Tong . . . the favorite oil field tong for general work for more than forty years. Chain swings from the center and can be used on either side of the jaw, thus reducing to a minimum the wear on specific teeth. Made in eight sizes for pipe 1/8" to 18".

DATA ON "VULCAN" CHAIN PIPE TONGS



The "V" recess in "Vulcan Superior" jaws assures quick, positive grip on fittings.

TYPES OF "VULCAN" CHAINS

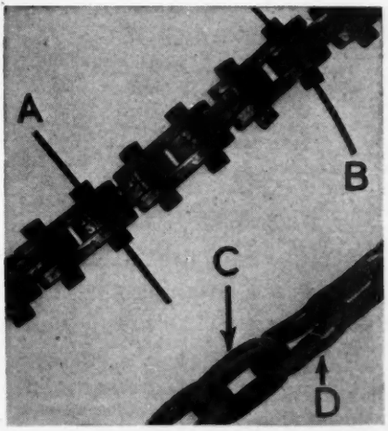
Both "VULCAN SUPERIOR" and "VULCAN" Tongs are furnished with *either* Flat Link or Cable Chain. Every "VULCAN" Chain, regardless of type, is individually *proof-tested* on a standard tension machine to two-thirds of its breaking strain. Each chain so tested is stamped 0 on the drop-forged swinging link and to it is attached a leaden seal bearing the Williams' "diamond W" trademark.

USE AND CARE OF TONGS

In using Chain Pipe Tongs the best gripping position is that which is midway of the jaw teeth, or rearward therefrom. The bending of the tong handle under load is not evidence of a defect. Such bending is intended to act as a warning and "safety valve" in advance of breakage of chain, which would incapacitate the tool.

In Flat Link Chains on tongs, an occasional inspection of the first two or three rivets and links adjacent to the swinging, or anchor link should be made, since the load is greatest at that point. Badly bowed, or curved rivets indicate that the chain has been loaded almost to breaking strength and is probably unsafe.

In Cable Link Chains, the links give warning by stretching and pulling "rigid" if the breaking point is approached.



A. Straight rivet indicates chain is safe.
B. Curved or bowed rivet—unsafe.
C. Safe link indicated by normal shape.
D. Link stretched or pulled "rigid"—unsafe.

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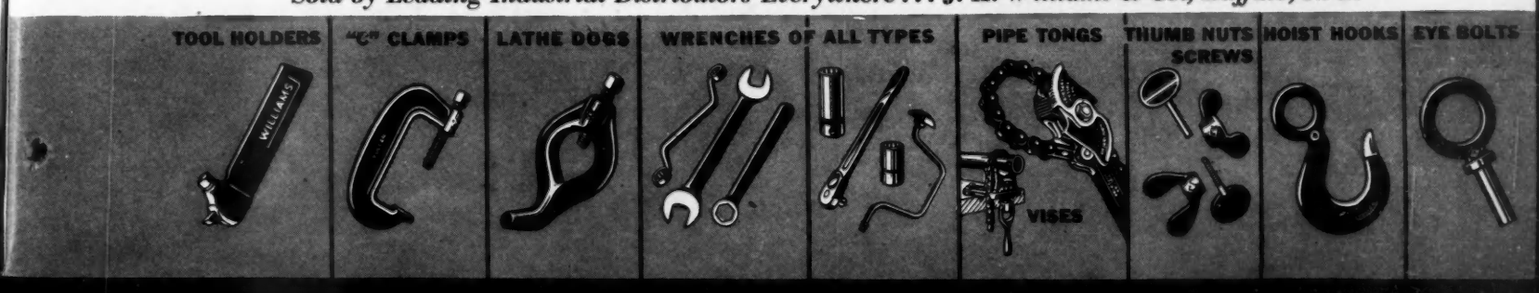

The Oil Industry makes history

Production of 100-octane gasoline stepped up nearly tenfold —from 28,000 to 250,000 barrels a day . . .

Plants nearly tripled—from 23 major units to 60 . . .

Half a billion dollars of private and Government funds invested in new facilities . . .

Half a million tons of metal—more than four fifths of it carbon and alloy steel—used in new building . . .

Such, in brief, are the goals—now well within sight—of the post-Pearl Harbor 100-octane gasoline production program. In meeting these goals, the oil industry is making history. Its cracking plants produce not only gasoline for the fighting fronts, but also valuable by-products—toluene for T.N.T., and styrene and butadiene for synthetic rubber.

Bethlehem is proud to have had a hand in accomplishing the high-octane expansion program—among other ways, by supplying thousands of the high-pressure and high-temperature fastenings that cracking plants demand. As increased needs became apparent, for the high-octane gasoline program and other phases of the war effort, Bethlehem's Bolt and Nut plant increased its already heavy production. More machines were put to work. More men and women workers were hired and trained. As a result, Bethlehem's production of carbon and alloy-steel heat-treated studs more than doubled during the first eight months of this year.

With the high-octane program well under way, Bethlehem is now in better position to fill other essential needs for high-temperature, high-pressure fastenings. Feel free to consult us. Simply get in touch with the nearest Bethlehem representative, or write direct to Bethlehem Steel Company, Bethlehem, Pa.

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Angry Congressmen Determined to Force Disney Bill

»

Canol Project Due for Airing by Truman Committee

»

Navy Studies New Agreement on Elk Hills Reserve

»

Production in December to Be 58,500 Barrels Higher

»

By B. F. LINZ
Washington Correspondent

☆ ☆ ☆ ☆

THOROUGHLY aroused by repeated refusals of the Administration to do anything with respect to crude oil prices, oil-state Congressmen last week resorted to direct action to blast the Disney bill out of committee and left House leaders in a spot where they either had to start the measure moving or be shown up as having no control over their own Democratic followers.

At the end of the week, nearly enough signatures to make it effective had been affixed to a petition to bring the Disney bill before the House, where the Administration's subsidy program had just been given a thorough working over. Oil-state representatives linked the bill and subsidies, pointing out that if Congress banned subsidies, Vinson's plan for incentive payments for new discoveries would be impossible, bringing the problem of relief for the industry back to its starting point—an increase in crude prices.

Meanwhile, on the other side of the Capitol, the stage was being set for a full-dress investigation of the Army's Canol project, on which the Truman committee will open hearings November 22. Having studied the project for several months and held secret hearings, the committee is believed already to know all the answers to the questions which it will ask of high government officials, and is seen as desirous of getting them into a public record as a basis for the report it will probably issue in the near future and which reportedly will hold the scheme unnecessary and undesirable.

During the week, the House naval affairs committee held a series of executive meetings for consideration of the Elk Hills situation, having before it the new agreement developed by the Navy and Standard Oil Company of California for exploitation of the reserve. Profiting by its experience last summer, when the House public lands commitee heard Justice Department officials denounce the contract entered into a year ago as illegal, the department submitted the new pact to the Attorney General for an opinion upon its legality and the authority of the Navy to enter into it.

Ired Oil-States Congressmen Plan Forcing Legislation on Price Raise

Congress moved nearer to an expression of its views on crude oil prices, as the list of signatures to the petition to bring the Disney bill out of committee grew rapidly during the week. At the close of the week, the oil block had signed up approximately 200 of the 218 members necessary to make such a petition effective, and was confident of quickly getting the remaining support required.

Meanwhile, the House fight against the Administration's subsidy program was aimed at banning the use of such payments to keep food prices down, but a refusal by Congress to appropriate or permit the use of any funds for subsidies was seen in Washington as limiting the matter of oil prices to the one question of whether they should be increased outright. So far, Vinson has had the last word and it was a determined "No."

Resolutions adopted at the Chicago meeting of PIWC, asking for legislative action to provide the crude oil price increase refused by Stabilization Director Fred M. Vinson and expressing the industry's opposition to any form of subsidy, were laid before Congress last week.

A copy of the resolutions was sent to each member of Congress by Chairman William R. Boyd, Jr., shortly before the House embarked upon consideration of legislation to ban subsidies, the final outcome of which may definitely determine whether Vinson's suggestion that PAW develop a program for incentive or bonus payments has any chance of being translated into actuality.

"The public is willing to absorb increased consumer costs if by so doing it will make available more gasoline and oil products," Boyd asserted. "Refusal to permit an average raise in price ceiling on crude oil now disregards the military and civilian welfare of the Nation.

"With greatly increased demand for petroleum, new reserves should be found, not only to replace each barrel being produced, but enough must be discovered to meet the demand without resorting to wasteful production methods. At the existing price ceiling, drilling activity is inadequate to produce the needed new reserves."

During the week, Representative Jennings Randolph of West Virginia made public correspondence with Ickes regarding a radio talk by former Price Administrator Leon Henderson touching upon the question of oil prices.

As reported to Ickes by the Congressman for comment, Henderson said that, "I never had any more pressure put on me in my life than I had as price administrator to raise the price of crude. I never could see any factual basis for raising the price, and evidently my successors haven't either. The profits of oil companies have been higher every year of the war than the year previous."

Also, discussing reports that Bernard Baruch would be asked to make a study of the oil situation, Henderson declared:

"A Baruch committee on oil might find that the oil industry really runs the Petroleum Administration. There is no other commodity in which the industry participates so directly in governmental war controls. Recently, I understand, an attempt was made to increase the industry control, but the anti-trust division stopped it because it was too much like a cartel. At least 16 of the top government officials who control oil are connected with leading oil companies. The industry has wanted to keep its competitive relationships just as they were before the war, and and the oil officials who act as government officers have tried to preserve this status, which policy no other industry has got from government."

Henderson's assertions, Ickes commented, "illustrate the dangers inherent in public comment on oil by persons who either do not know the true facts or have made no effort to learn them."

Admitting that PAW has made the fullest use of the abilities of the men in the industry, the Administrator denied that the industry really runs the agency and, he said, "we take pride in the record made by the partnership between the oil industry and government which has marked the course of our joint efforts."

Instead of 16 of the top PAW officials being big company men, Ickes declared, that is the number of men from the smaller companies and only 12 of the top 28 are from the leading oil companies as defined by TNEC, of which, he pointed out, Henderson had been a member.

Continuing a categorical denial of Henderson's charges, Ickes said "it is not true that PAW recently made an attempt to increase the industry control or that the anti-trust division of the Department of Justice stopped it because it was too much like a cartel. The fact is that the Department of Justice has

never disapproved a program we have submitted to that agency."

At a press conference November 18 Ickes said he has taken no further action with respect to an increase in crude prices, but was waiting to see the results of the effort to secure consideration of the Disney bill.

Expressing grave doubt that the PAW drilling program for 1944 will actually be attained as outlined by Ickes at the API convention, Representative Leon H. Gavin of Pennsylvania told the House November 18 that the greatest handicap will be not manpower, materials or equipment, but money. The lack of funds, he asserted, will be due to the refusal of OPA and the director of stabilization to increase the price of crude.

Gavin ridiculed the Administration's suggestion for subsidies, declaring that they would cost far more than the $500,000,000 which it has been charged the price increase would cost, for discoveries and relief of stripper well operators alone. The Pennsylvania Congressman challenged Representative Wright Patman, who has been loudly vocal in favor of subsidies and charging that opposition to the Administration's subsidy plan is a "vicious Republican plot," pointing out that as chairman of the small business committee, Patman last May held "that subsidies and bonuses are **untried** in the oil industry and unworkable and undesirable for the general purposes now needed."

"We will not drill the number of wells which the petroleum administrator recommends in 1944 under the present prices nor will we maintain the small wells of the nation in production," Gavin predicted.

District 2 Committee Urges Action on Several Problems

At the recent meeting of the production committee of PAW District 2, in Chicago, the committee reasserted itself in favoring and urging an increase in the price of crude oil. At the same time a unanimous vote rejected the plan of any subsidy affecting the operations of the oil industry, exploratory or otherwise.

The committee urged that the War Manpower Commission give consideration to the deferment of derrick men, floor men, firemen, pumpers and tool dressers. It appears that the local draft boards do not have full information to defer the above mentioned essential workers in the oil industry. It also suggested that full and complete details be furnished draft boards and the United States Employment Service in assisting those offices in their consideration for deferment of any workers necessary in the oil industry. Many companies in the oil industry, it was said, have furnished replacement schedules to the various state agencies, which has assisted materially in the controlled manpower subjected to the draft.

Information was released at the committee meeting that some steel mills now furnishing a new alloy or better grade of steel to the industry, which will result in a better grade of drill bits, drill collars, tool joints and oil well sucker rods. It will be two or three months before any benefits will be obtained in the operations in the field.

December Production Rate Set at Highest Level in History

The United States oil industry will wind up the year at the highest production rate ever attained—4,425,100 barrels daily of crude and 269,100 barrels daily of natural gasoline and condensate in December under certifications to the states announced November 19, by PAW.

The total output of all petroleum liquids for the entire year now is estimated at 1,497,434,000 barrels, the highest on record.

The December certifications of 4,694,200 barrels daily of all petroleum liquids represents an increase of 58,500 barrels per day over the current month and 561,500 barrels daily more than actually was produced in the final month of 1942.

Every district, except District 1, is to produce more oil in December than it will produce this month. The overall revision was explained by Ickes as follows:

"It appears that the decline in productive capacity for many of the larger unrestricted fields in Illinois and Oklahoma has been to level out noticeably. As a result the arrested decline in productive capacity for the larger unrestricted fields in these two states, together with the development of important new reserves in Oklahoma, our certified production rates for District 2 have been increased to conform as nearly as possible with anticipated actual production.

"The net increase in District 3 is attributable entirely to Texas, where measures promulgated by the Texas Railroad Commission in the interest of preventing physical waste in the East Texas fields have made it possible to increase oil withdrawals as a result of a sharp decrease in water production.

"Additional productive capacity in District 4 and District 5 has been made available as a result of new drilling and adjustments of production rates for several important fields.

"In connection with the certification of production rates, I should like to emphasize that these certifications are not intended to restrict production rates, but rather constitute recommended rates which are used as a basis for our nation's oil production program.

"For those states that have no state regulation of production, we are certifying rates that past performance indicates will actually be produced. However, in view of the necessity for obtaining all the oil that can be efficiently produced, I am urging that those states that have no state regulation of production produce all the oil possible compatable with efficient production practices."

The PAW schedule for December shows increased output only in West Virginia of the three District 1 states, with production of all petroleum liquids raised from 15,900 to 16,400 barrels daily. New York production is cut from 14,500 to 14,400 barrels, and Pennsylvania from 46,300 to 45,500 barrels.

All states in District 2 are increased except Nebraska, cut from 1600 to 1500 barrels, and Ohio, cut from 10,100 to 9600 barrels, with Illinois increased from 217,600 to 227,700 barrels; Indiana from 14,000 to 14,400 barrels; Kansas from 291,000 to 291,100 barrels; Kentucky from 27,500 to 28,500 barrels; Michigan from 56,100 to 57,100 barrels; and Oklahoma from 346,000 to 358,000 barrels.

In District 3, Texas will top the 2,000,000-barrel mark with an increase from 1,999,000 to 2,018,000 barrels, while Mississippi will be cut back from 49,000 to 48,000 barrels, and the remaining three states unchanged—Arkansas at 81,700 barrels, Louisiana at 375,700 barrels, and New Mexico at 116,600 barrels.

Increases in Wyoming production from 100,800 to 103,700 barrels and Montana output from 23,300 to 23,800 barrels with Colorado unchanged at 7000 barrels, will increase District 4 output by 3400 barrels daily.

California is increased from 842,000 to 855,500 barrels.

The above figures include natural gasoline and condensate, as well as crude, but separate estimates of the former were prepared by PAW, as follows: Pennsylvania, 1500 barrels daily; West Virginia, 7000 barrels; Illinois. 12,700 barrels; Kansas, 6100 barrels; Kentucky. 3000 barrels; Michigan, 100 barrels; Ohio, 400 barrels; Oklahoma, 28,000 barrels; Arkansas, 4800 barrels; Louisiana, 22,000 barrels; New Mexico, 6000 barrels; Texas, 126,000 barrels; Montana, 300 barrels; Wyoming, 3700 barrels; California, 47,500 barrels.

Bill Would Put All Fuel Matters Under One Head

Consolidation in two agencies, both under Ickes, of all federal activities relating to the supply, rationing and pricing of oil and coal is proposed in legislation introduced in Congress November 15 by Senator Reed of Kansas on behalf of himself and Senators Clark of Missouri and Wherry of Nebraska.

All oil matters would be centered in PAW and all coal matters in the Solid Fuels Administration.

The bill provides that all functions relating to the production, transportation, distribution, sale or price of petroleum or natural gas now exercised by the Office of War Mobilization, Office of Economic Stabilization, War Production Board, Price Administration, Office of Defense Transportation and the National Labor Board would be transferred to PAW.

Following the transfer, PAW would be authorized to delegate to any department or agency any functions to be vested in the oil administration, but the administrator would be required "to formulate and require the execution of such policies, programs, and measures as he deems necessary to provide for the coordination of the functions of departments and agencies of the government relating in any manner to the production, transportation, distribution, sale or price of petroleum or natural gas."

Canol Project Gets Further Hearing Before Senate Committee This Week

Laying further groundwork for its forthcoming report on the Canol project, the Senate Special Defense (Truman) Committee last week called Secretary Ickes before it to discuss the foreign situation as a preliminary to public hearings on the Army's Canadian project, to open November 22.

The plans and progress of the Administration in the development of increased supplies of foreign oil were discussed with the committee November 15 by Ickes.

What Ickes told the Senators remained a secret, for the hearing was held behind locked doors, but he is understood to have discussed not only the activities of PAW but also the plans of Petroleum Reserve Corporation for development of the Middle East reserves.

The Canol situation also is understood to have been touched upon, but the subject of the Army's ambitious program in Northern Canada was largely reserved for detailed study this week. Previously, the committee had secured and perused all the documents relating to Canol in possession of the War Department, as well as studies and other material gathered by the Office of Economic Warfare and other agencies, and had held secret hearing at which Army officials concerned with the project were questioned, some of them being brought to Washington from remote points.

At the two-day hearing, witnesses will include Ickes, Lieutenant General Brehon Somervell, Budget Director Harold D. Smith, and H. LeRoy Whitney, technical advisor to WPB Chairman Donald Nelson.

Chairman Harry S. Truman of Missouri explained that last September a subcommittee, consisting of Senators Harley M. Kilgore of West Virginia and Homer Ferguson of Michigan, visited the Canol refinery at Whitehorse, Canada, and held "private" hearings there concerning the project.

"As a result the full committee is holding open hearings concerning the $130,000,000 project," Truman said.

"The Canol project includes wildcatting for oil, drilling of oil wells, laying a pipe line across apparently unexplored parts of Canada, constructing a refinery and erecting numerous other facilities. The committee has investigated the reasons for entering into this mammoth project, the manner in which it was entered into, and the manner in which it was carried out.

"It is significant that after the war the United States will not retain the oil discovered as a result of our huge expenditures."

Agitation over the project dates back several months, when it was first discovered that the Army had embarked upon it without consulting the experts in PAW and the reported disinclination of Standard Oil Company (New Jersey) to engage in the job, which it had been asked to handle. It is reported that the company made clear its position and its belief that the results would not justify the expenditure, and finally took the job on a basis of cost plus $1.

Publication of details of the project in a Canadian paper, while papers in the United States still were without information regarding it, led to a series of attacks in Congress which centered attention on the matter and influenced the Truman committee to study it.

At recent hearings before the House oil subcommittee, Davies admitted that PAW was never consulted by the Army and knew nothing about the project until after it got under way, whereupon it submitted some unsolicited advice to the War Department, which ignored it. PAW, it was brought out, would not have favored the adventure.

W. M. Averill Appointed Director of District 3

William M. Averill, Corpus Christi, has been appointed director in charge of PAW District 3, Houston, assuming the position November 17. He succeeds D. E. Buchanan who returns to Tulsa as president and director of Hanlon-Buchanan, Inc.

Averill formerly served PAW as director of transportation for District 3. He resigned in July, 1943, after serving 13 months, to return to private business.

Born at Beaumont, Texas, Averill studied engineering at Princeton University. He started his career with Pure Oil Company, and was vice president of Pure Transportation Company when he resigned in 1937 to enter business for himself. He has production in Southwest Texas, and is a partner in the firm of Cox and Averill.

Buchanan took a leave of absence from his company January 1, 1942, to serve as chief of the natural gas and natural gasoline section of the district.

House Investigators Critical of OPA

"Illegal, absurd, useless and conflicting" regulations of the Price Administration were roundly scored November 15 in a report by a special House committee to investigate the executive agencies.

While the committee voiced the conviction that rationing and price control are vital wartime necessities, it recommended in the report that legislation be enacted to retain and strengthen inflation control but eliminate "the abuses and injustices now apparent."

"The committee finds that OPA has assumed unauthorized powers to legislate by regulation and has, by misinterpretation of acts of Congress, set up a nationwide system of judicial tribunals through which this executive agency judges the actions of American citizens relative to its own regulations and orders and imposes drastic and unconstitutional penalties upon those citizens, depriving them in certain instances of vital rights and liberties without due process of law," the report declared.

"No executive agency should have or assume power to enact subordinate legislation in the form of rules, regulations and orders except within limited and rigidly restricted bounds prescribed by Congress, nor should such agency be permitted to create mock courts to try offenders against such rules or inflict punishments on such offenders."

As a "typical example of the legalistic language employed by OPA," the committee quoted the following from a maximum price regulation on bakery products:

"All commodities listed in Appendix A are those known to the trade as such, excepting therefrom such thereof, if any, while subject to another regulation."

Several of the committee's charges were based on documents found in the files of David Ginsburg, former OPA general counsel who was inducted into the Army last April. Those documents, it was declared, showed "a well devised and planned scheme to control the profits of American industry by freezing them at the level earned by such industry during the period 1936-1939" regardless of increased production costs.

Fortas Quits Arabian Mission; Still Delayed

Abe Fortas, 33-year-old Undersecretary of the Interior whose resignation was declined last May by President Roosevelt with the statement that he could best serve the country by remaining in the department and who, after induction in the Navy early this month, was given leave of absence to head the Petroleum Reserve Corporation's mission to study the Middle East oil situation, is in Navy "boot" camp and the commission is still in the United States.

Impatient over the delay in getting the Middle East mission started—it has been held up by transportation problems—Fortas left the department abruptly November 16 and reported for duty as an apprentice seaman.

Fortas submitted his resignation to Ickes last spring, when Congress was investigating alleged draft-dodging by government employes. Ickes took the resignation to the White House with the statement it had been submitted because the undersecretary did not want either his chief or the Administration to suffer as a result of possible attacks upon his failure to go into military service.

Ickes said that E. DeGolyer would succeed Fortas as head of the mission and that efforts were being made to secure a man to fill out the group.

Suit Seeks California Tideland Oil Permit

In a new effort to have the California offshore oil lands declared to be owned by the government, Robert E. Lee Jordan, California operator, has filed suit in the District of Columbia Federal Court of Appeals to require the Secretary of the Interior to grant his application for oil and gas leases on claims he has staked out off the California coast.

Jordan for some years has been trying to secure an oil lease from the government on the ground that the underwater fields are part of the public domain, and it was largely as a result of his efforts that Congress several years ago considered proposals to declare that title to the lands was vested in the government.

Independents Suspicious of Government's Foreign Plans

Independent operators studying the proceedings of the API convention last week indicated their suspicions that the policy of PRC would not necessarily coincide with that of the industry.

Criticizing Ickes' failure to be more explicit regarding the purpose and program of the corporation, Russell B. Brown, general counsel of the Independent Petroleum Association, declared that "if it is the purpose to carry out some unrevealed plan inspired by the Atlantic Charter, as was suggested by Mr. Ickes' speech, we should know what the purpose and plan is. It should not be left to conjecture.

If it is the purpose to launch the government in the oil business in foreign countries, either by itself or as a partner of some few in the oil business, we should be told this purpose in simple language," Brown said.

"I do not believe it is sound for our government to go into the oil business, either here or abroad. I do not think it sound for it to select a few and go into partnership with them, either here or abroad.

"The charter of PRC contains powers that, if used, might be very harmful to our industry and our country. Whether it is the plan to use such powers is of rightful concern to every one of us. The usual frankness and forthright declaration of purpose that has earned the respect of so many in the oil industry for Mr. Ickes would serve well here."

While Ickes continued reticent about the operations of PRC, he did indicate November 18 that any activities engaged in abroad would be under the American flag solely, and without any entangling alliances.

Asked to comment on reports that he was interested in an "international oil pool," Ickes told his weekly press conference that "I am not interested in any international pool, or cartel or any proposal to divide foreign markets."

Production in Venezuela, he said in discussing the supply situation, is being stepped up from approximately 775,000 barrels daily to something over 1,000,000 barrels.

ICC Studying Post-War Transportation Problems

The Interstate Commerce Commission is making an exhaustive study of post-war transportation, an important phase of which will be the part to be played by petroleum pipe lines.

PAW transportation officials last week met with ICC experts to discuss the matter, with a view to coordinating information that will be used by ICC in a report, which it is planning.

Oil Materials Included In Russian Lend-Lease

With the stage all set, as a result of the Moscow meetings, for the long-projected meeting of Roosevelt, Churchill and Stalin, a report issued November 16 by Foreign Economic Administrator Leo T. Crowley disclosed that lend-lease shipments to Russia during the first nine months of this year exceeded three and one-quarter billion dollars in value, more than one-fourth of it in the form of industrial materials.

Included in the $884,000,000 worth of industrial materials shipped to the Soviet were 500,000 tons of petroleum products, and more than 1,000,000 tons of steel and steel products, 300,000 tons of non-ferrous metal and 300,000 tons of chemicals and explosives, in which were included materials needed for the Russian oil industry.

PIPE LINE REVIEW

PAW Reports on Pipe Line Project Progress

Pumpings through the Big-Inch pipe line from Longview to Norris City averaged 285,671 barrels daily during the week ended November 12, while tank car loadings at the Illinois terminal averaged 34,667 barrels, it is disclosed in the latest report of PAW on the status of pipe line projects. A total of 522,068 barrels of crude were in storage at Norris City on November 12, consisting of 306,994 barrels of East Texas oil, 90,483 barrels from Southwest Texas and 124,591 barrels from West Texas.

Pumpings through the line from Norris City to the East Coast averaged 221,797 barrels daily, of which 128,051 barrels went to the Philadelphia area and 86,797 barrels to New York.

During the seven days ended November 9, it was stated, the Southwest Emergency line pumped a daily average of 42,713 barrels from Heard station.

Arrangements have been completed with Standard Oil Company of New Jersey for the purchase by it of 300,000 barrels of East Texas crude out of stocks in the Ohio system and the sale by Standard of an equivalent amount to refineries in District 2.

Other details of the report were as follows:

Projects Nos. 6 and 10

Western leg—Contract awarded for construction of new 8-inch feeder line from Beaumont to Lake Charles. Pipe and other material received and construction crews are being assembled for immediate commencement work. Stations B and 7 now in operation and the other ten stations, including Baytown, are under construction. Work at stations A, D, 5, 6 and 9 well advanced. Five of the twelve 55,000-barrel tanks being erected at Baytown completed. Nine of the twenty tanks at Beaumont have been repaired and are being cleaned for products storage.

Eastern leg—757 miles of pipe strung and 712 miles welded. Pipe laying 89 percent finished and should be completed by early part of December. Initial operations to Linden are scheduled to start in January.

Project No. 8

Western leg—Completed.

Eastern leg—Eight of the fifteen 80,000-barrel tanks to be erected at Phoenixville are completed and seven others under construction.

Project No. 20

Line more than 72 percent completed. 184 miles of pipe strung and 180 miles welded. All seven pump stations nearing completion and tankage at Toledo 30 percent erected. Project scheduled for completion in December.

Project No. 21

Construction contracts awarded and pipe laying on two of the five sections scheduled to start November 20. Construction of two pump stations and erection of tanks have begun. Project scheduled for completion by April, 1944.

Project No. 22

46 miles of 8-inch loops between Midland and Seminole completed and in service. On 335-mile 12-inch line from Midland to Corsicana, one gang working east from Midland has 24 miles of pipe strung and 5 miles welded. A second gang will start westward from Corsicana within a few days; 44 miles of 12-inch pipe received and 50 miles enroute from mills. Project scheduled for completion by March.

Project No. 23

Yale oil pipe line negotiating with contractors concerning construction of this line in the Elk Basin area. Present indications are that the 8-inch main line section will not be constructed until next spring. The 6-inch laterals out of Elk Basin and Frannie, as well as the 6-inch to the Laurel refinery, will be constructed immediately after contracts have been arranged.

Contracts on 24-Inch Gas Line Awarded

Tennessee Gas and Transmission Company has announced from its Houston office that practically all material of major importance has been purchased and practically all contracts let for the laying of the 1188 miles of 24-inch gas line from the Corpus Christi area of Southwest Texas to West Virginia, and that work will begin at once. Right-of-way men are in the field and ground survery crews are working ahead of them.

A. O. Smith Corporation was given the order for 880 miles of the 24-inch line which will be welded pipe and 308 miles went to the National Tube Company for seamless 24-inch pipe.

Of the pipe contracts awarded, Williams Brothers received 612 miles; Bechtel, Dempsey and Price 336 miles; Brown and Root 120 miles, and N. A. Saigh 120 miles. Henry L. Lemmons of Corpus Christi received the contract for approximately 7 miles of gathering lines which will be miscellaneous 10-inch, 12-inch and 18-inch. The only contract for laying of pipe that has not been awarded is the 85 miles of 18-inch at the discharge end of the line in West Virginia. There will be 360 miles of line in Texas, 206 miles in Louisiana and Arkansas, 174 miles in Mississippi, 189 miles in Tennessee and 259 miles in Kentucky.

All river crossings will be of seamless pipe, some of which will be delivered this month. Contracts for all of the 20 river crossings went to Williams Brothers. Of the major crossings some will have to be bridged.

There will be seven compressor stations and one dehydration plant.

Commission Fixes Texas December Allowable Over 2,000,000 Barrels

The Texas Railroad Commission Friday issued its December proration order, fixing a total net allowable of 2,038,938 barrels per day. This was 5938 barrels above the recommendation of PAW. The order called for 22 shutdown days.

The commission increased its estimate of natural oils, distillate and natural gasoline produced in the state from 116,000 to 135,000 barrels daily. This reduces the amount of proratable oil needed.

Changes by fields were as follows: Maubro increased from 1261 to 1500; Tomoconnor reduced from 50,110 to 44,085; Clay Creek advanced from 658 to 783; Markham advanced from 802 to 1200; Hawkins reduced from 48,785 to 31,000 barrels; Slaughter cut from 43,489 to 42,068; Wasson from 48,342 to 44,437; Yates increased from 30,315 to 32,415; and Panhandle increased from 91,651 to 107,537 barrels.

Changes in shutdown days were as follows:

Knox Mississippi lime was exempt, and will have 28 producing days. The Panhandle will produce 27 instead of 22 days. Tomoconnor has 20 instead of 22 producing days. Slaughter and Wasson will produce 19 days. East Texas will have 23 producing days.

Statewide Hearing

Nominations filed by purchasers with the commission at the monthly hearing, held earlier in the day, showed a demand for 2,103,905 barrels per day for December, 7467 above the November demand. The demand dropped 11,151 barrels per day in West Texas to 347,646 barrels daily; there was a drop of 7217 barrels in demand for oil from the East Texas field, leaving 394,882 barrels per day, and in the rest of the East Texas District there was a drop of 5,360 barrels to 106,694 barrels per day.

Increases, however, more than offset these declines. Operators wanted 8983 barrels more from Gulf Coast District 3 13,121 barrels more from the three Southwest Texas Districts, 1568 barrels more from the East Central Texas area, 578 barrels more from West Central Texas, 4346 barrels more from North Texas, and 2800 barrels per day more from the Panhandle.

Humble Oil & Refining Company reported nominal reductions resulting from difficulties in obtaining enough tank cars for shipping oil to the Atlantic seaboard. This required a cut in nominations of 6500 barrels daily in the Tom O'Connor field and 8000 barrels less at Hawkins.

The commission reported a drop of 2.98 pounds in the average bottom-hole pressure of the East Texas field during October. During the month production totalled 11,527,288 barrels, or 371,848 barrels per day.

Byran Payne reported that the East Texas Salt Water Disposal Company injected 166,355 barrels of water daily during October, 20,500 barrels above the September average. The first 18 days of November the company injected an average of 176,323 barrels of water. It is now drilling four injection wells and will have two more ready to start soon.

Texas Allowables by Districts

DISTRICT		Allowable December 1	Allowable November 13
1	Southwest	25,338	26,448
2	Southwest	139,773	147,899
3	Gulf Coast	507,271	512,921
4	Southwest	190,153	193,137
5	East Central	42,155	43,211
6	East Central	94,704	112,277
	East Texas Field	371,635	383,539
7-B	West Central	31,538	31,914
7-C	West Central	20,791	21,158
8	West Texas	343,755	383,539
9	North Texas	134,872	137,105
10	Panhandle	107,537	93,819
	Total	2,009,509	2,061,893
	Less Underproduction of Six Percent	120,571	.....
	Plus Natural Oils	135,000	.....
	Total	2,023,938	.....

Payne said that the pressure drop from January 1, to November 1, 1943, was 8.09 pounds. During these ten months oil production totalled 106,839,585 barrels, an average of 351,446 barrels per day. Salt water production totalled 100,301,510 barrels, or an average of 349,676 barrels daily.

The disposal company and independently operated injection systems returned to the sand 55,542,508 barrels of water, an average of 182,705 barrels per day. During the ten months the total net fluid withdrawal was 185,998,902 barrels, an average of 66,839 barrels per day.

Payne thought that the decline in October represented a normal pressure adjustment in the field, and was not dangerous. This means that the field can continue to produce 23 days each month.

The commission reported that Danciger Oil Refineries wished to reopen its East Texas refinery, and needed 7000 barrels of crude daily for the plant. PAW had advised, however, that the request should not be approved if other operation would be adversely affected.

"Here is your chance for free enterprise, gentlemen," commented Commissioner Culberson, "I have been hearing you talk about it." There was no response for a moment. Then Paul McDermott rose to speak for Sinclair Refining Company.

"The trouble is we just haven't got the oil," he said.

"I thought you would find some excuse," commented Culberson. "I just wanted to see how sincere you are about this (free enterprise)."

Californians Denounce Government Regulations

Hearings at Los Angeles last week by a California Assembly interim committee seeking to promote state-federal cooperation in petroleum development, were marked by harsh denunciations of PAW as well as of OPA, and some bitter castigation of Los Angeles municipal authorities.

Among those appearing before the committee were a number of oil operators. Lyman C. Hisey, president of Alliance Petroleum Company, condemning the multiplicity of PAW regulations and restrictions, held the administration responsible for the ruin of a 5,020-barrel well and the blighting of the whole development of newly discovered production his company had brought in aggregating possibly 100,000,000 barrels, he said. The well he cited, Hisey 5, in the Ventura Avenue field, he said, opened a previously unknown zone with an initial flow in excess of 200 barrels an hour. PAW, he said, immediately ordered him to curtail to a rate of 150 barrels a day, regardless of the crying need of new California production and oblivious to the danger to the well. Under threat of having the Army close the well, Hisey said, he attempted compliance with the result that the casing burst under tremendous pressure and the hole was irreparably wrecked.

J. A. Smith, president of Independent Petroleum & Consumers Association, branded the Ickes-controlled program for California a dismal failure and placed upon it responsibility for hampering the war effort.

"The plan is insane," he said. "It is being used to drive the independent oil producer out of business. If that is its purpose, the plan is perfect. But if the hope is to produce oil to drive the Japs out of the Pacific, it is entirely wrong."

Smith cited a statement of Capt. R. B. Coffman, assistant commander of the 11th Naval District, in May, 1941, to the effect that California oil pools are known to aggregate 3,700,000,000 barrels of reserves, "enough to meet the present war needs of the United States Fleet for 400 years." He suggested that the committee demand of OPA chiefs an explanation of why it is necessary to ration gasoline at three gallons when the land holds enough to supply the Navy for four centuries.

Richard Fenton, California Stripper Wells Association executive, denounced government price-fixing for crude oil production which he said is forcing abandonment of a great number of California stripper wells, "just throwing away 1,000,000 to 5,000,000 barrels of potential production in this state alone."

Adams Sells Remaining Properties to Sohio

Sohio Producing Company, subsidiary of Standard Oil Company (Ohio), has purchased the remaining assets of Adams Oil & Gas Company, it was reported in Cleveland, Ohio, November 19.

The deal includes interests in the Patok and Centralia fields of Illinois and on the Wilcox sand trend in Southwest Texas. The trade also involved large blocks of royalty in different states. The consideration included 54,847 shares of Standard Oil Company (Ohio) stock, now worth $41 a share, and a cash payment.

Indian Lease Sale

Sixty-nine tracts of irregular size are offered for oil and gas lease by the Indian Agency at Muskogee, Oklahoma, sealed bids to be opened December 14. Included are 2 tracts in Nowata County, 12 in Creek, 1 in McIntosh, 13 in Okfuskee, 7 in Hughes, 3 in Seminole, 1 each in Pittsburg, Coal, Pontotoc and Garvin, 14 in McClain, 11 in Grady and 2 in Stephens.

Stocks of Gasoline and Gas Oil Rise But Those of Residual Fuel Decline

Operations of the industry proceeded at exceptionally high levels in the week ended November 13, with production of crude oil at an unprecedented level and refinery runs up from the previous week, although not in new high ground.

These operations resulted in a small addition to the stocks of gasoline and a substantial building of inventories of gasoil and distillate as refinery production of both those products was greater than in the previous week; although there was an increased rate of withdrawals from stocks of residual fuel oil, with production of the latter urgently needed product off slightly.

Having averaged 4,436,000 barrels per day during the week, crude oil output was 47,000 barrels a day greater than in the previous week and 556,000 barrels daily or 14.3 percent higher than production in the corresponding November week last year.

Crude runs to stills at 4,134,000 barrels daily were 55,000 barrels above the previous week, and 85.6 percent of the United States refinery capacity of 4,827,000 barrels per day being utilized.

The combined East Coast-Southwestern districts used 85.7 percent of capacity in charging to stills 2,094,000 barrels of crude daily, California 87.1 percent (712,000 daily), the Middle West 89.3 percent (736,000 daily), Oklahoma-Kansas 84.1 percent (350,000 daily), the Appalachian region close to 80 percent (137,000) and the Rocky Mountain region around 70 percent (105,000 daily). The runs to stills were 93,000 barrels short of the all-time high reached at the end of August, this year, but were 332,000 barrels a day or 8.7 percent higher than one year ago.

Stocks of crude oil totaled 236,937,000 barrels on November 6, down 282,000 barrels from a week previously but 739,000 barrels or 0.3 percent more than on November 7 last year.

Having amounted to 12,223,000 barrels in the week of November 13, production of gasoline was 51,000 barrels greater than in the previous week and 754,000 barrels per week or 6.6 percent in excess of output in the week of November 14 last year. Stocks of gasoline were increased 28,000 barrels between November 6 and November 13, to a total of 68,726,000 barrels, but the latter quantity was over 7,000,000 barrels or nearly 10 percent less than the 76,028,000 barrels on hand November 14, 1942.

Gasoil and distillate production amounted to 4,633,000 barrels in the week of November 13 this year, having been 346,000 barrels greater than in the previous week and 535,000 barrels per week or 13.1 percent higher than in the corresponding week last year. With re-

Crude Oil Production in the United States

(Estimates compiled by The OIL WEEKLY. All figures indicate daily averages, in barrels)

STATE OR DISTRICT	PRODUCTION IN WEEK ENDED November 20	November 13
Arkansas	78,550	78,100
California	788,900	790,200
Long Beach	30,500	30,750
Midway-Sunset	56,100	56,200
Kettleman Hills	41,100	42,300
Wilmington	93,100	93,850
Rest of State	568,100	567,100
Colorado	7,300	7,300
Illinois	214,300	214,700
Salem	28,100	27,700
Louden	35,900	33,900
Other New Pools	137,650	139,000
Old Pools	12,650	14,100
Indiana	13,150	14,600
Kansas	281,300	288,700
Kentucky	22,350	24,750
Louisiana	350,950	351,150
North	78,650	78,800
South	272,300	272,350
Michigan	60,600	52,100
Mississippi	46,600	52,300
Missouri	95	95
Montana	21,598	25,900
Nebraska	1,700	1,700
New Mexico	112,700	112,700
New York	13,900	12,800
Ohio	9,000	9,150
Oklahoma	326,650	327,500
Oklahoma City	51,300	51,700
Seminole Area	73,100	34,100
Rest of State	202,250	241,700
Pennsylvania	40,100	40,150
Tennessee	35	35
Texas	1,924,550	1,924,400
Upper Gulf Coast	524,550	524,650
East Texas Field	376,500	376,300
Rest of Eastern Texas	138,050	138,000
Lower Gulf Coast	197,600	197,350
Southwest Texas	80,200	80,250
South Central Texas	20,750	20,700
West Texas	359,700	359,800
North Texas	141,800	141,750
Panhandle	85,400	85,600
Utah	10	10
West Virginia	8,000	8,800
Wyoming	100,950	98,700
Total United States	4,423,288	4,435,840

Trends of Operations and Changes in Stocks

Figures on crude stocks are from Bureau of Mines weekly reports; all others from American Petroleum Institute weekly reports, which are estimates on Bureau of Mines basis.

(All figures in thousands of barrels—add 000)

HIGHS AND LOWS OF RECENT YEARS

ITEM	Crude Oil Prod. Barrels Daily	Week Ended	Runs to Stills Barrels Daily	Week Ended	Crude Stocks Barrels	Week Ended	Gasoline Stocks Barrels	Week Ended	Gas Oil & Distillate Stocks Barrels	Week Ended	Residual Fuel Oil Stocks Barrels	Week Ended
Highs:												
1939	3,910	8- 5	3,650	10-21	278,607	5-26	87,769	4-22	39,562	10-28	116,237	8-26
1940	3,890	3-16	3,690	6-22	265,865	8-31	102,817	4-20	49,051	10-19	109,135	9-14
1941	4,337	11-22	[1]4,120	10-18	266,187	3-29	99,727	3-29	[1]54,983	11-15	102,448	1- 4
1942	4,337	2- 7	3,961	1- 3	263,208	3-28	[1]109,281	3-14	49,861	11-14	95,857	1- 3
1943	[1]4,436	11-13	4,227	8-28	245,752	5-29	94,159	3-20	45,316	11-13	72,881	1- 2
Lows:												
1939	[3]1,601	8-26	3,125	2-18	[2]229,127	10-12	71,152	10- 7	20,722	4-15	105,397	4- 8
1940	3,335	11-30	3,370	1- 6	237,339	1-27	79,847	11- 9	23,551	4- 6	102,344	2-10
1941	3,364	1-11	3,490	1-18	240,399	11-15	79,923	10- 4	28,381	4-12	90,914	7-12
1942	3,297	7- 4	3,393	5-23	231,896	12-12	75,934	12- 5	29,240	4-25	72,962	12-26
1943	3,821	1- 9	3,579	3-13	232,191	1- 9	68,182	10-16	30,732	4- 3	62,647	11-13

TRENDS OF 1942 AND 1943

Trends in Week Ended:	Crude Oil Production Daily	Runs to Stills Daily	Stocks Week End	Gasoline Production Weekly	Stocks Week End	Gas Oil & Distillate Production Weekly	Stocks Week End	Residual Fuel Production Weekly	Stocks Week End
1942:									
January 3	4,038	3,961	244,440	13,797	92,987	3,855	49,357	6,918	95,857
January 31	3,871	3,848	250,740	13,292	97,810	3,817	40,674	6,640	91,189
February 28	4,016	3,675	259,373	12,131	105,635	3,799	34,547	6,813	88,285
March 28	3,820	3,667	263,208	11,663	105,624	3,661	31,756	6,344	83,045
April 25	3,581	3,506	257,073	10,535	102,897	3,267	29,240	6,869	81,107
May 30	3,877	3,522	255,023	10,478	95,355	3,034	31,384	6,993	79,628
June 27	3,719	3,581	253,364	10,713	88,396	3,549	32,851	6,615	77,304
July 25	3,691	3,658	249,262	10,864	82,281	3,647	35,966	6,796	77,816
August 29	3,964	3,697	249,007	11,300	80,831	3,850	42,060	6,875	78,034
September 26	3,909	3,802	242,785	10,954	80,550	4,215	45,945	7,094	78,943
October 31	3,901	3,731	239,266	11,153	79,159	.....	48,131	.....	79,166
November 28	3,878	3,736	234,850	11,269	78,854	.....	49,739	.....	77,796
1943:									
January 2	3,871	3,734	233,938	10,957	82,420	4,285	42,913	7,683	72,881
January 30	3,826	3,698	233,863	10,339	88,830	3,888	37,057	7,452	70,763
February 27	3,873	3,709	235,217	10,566	93,157	4,230	32,939	7,839	70,140
March 27	3,896	3,742	239,126	10,231	94,079	3,541	30,980	8,018	67,938
April 24	3,913	3,737	242,035	10,583	91,001	3,954	31,142	8,168	67,455
May 29	3,970	3,679	245,752	10,656	83,937	3,798	32,274	7,672	67,682
June 26	3,955	4,015	242,657	11,092	79,589	3,876	34,044	8,126	67,960
July 31	4,133	3,788	238,420	11,127	74,977	3,765	36,363	8,478	66,877
August 28	4,196	4,227	236,170	12,420	72,525	4,351	37,928	8,732	67,250
September 25	4,344	4,156	233,013	12,206	70,024	4,608	40,328	8,560	66,659
October 30	4,383	4,176	237,219	12,813	69,297	4,642	44,591	7,968	63,838
November 6	4,389	4,079	236,937	12,172	68,698	4,287	44,776	8,135	63,551
Nov. 13, 1943	[1]4,436	4,134	.....	12,223	68,726	4,633	45,316	8,103	62,647
Nov. 14, 1942	3,880	3,802	[4]236,198	11,469	76,028	4,098	50,533	7,306	78,543
Change:									
In week	+47	+55	−282	+51	+28	+346	+540	−32	−904
In year	+556	+332	+739	+754	−7,302	+535	−5,217	+797	−15,896
In year	+14.3%	+8.7%	+0.31%	+6.6%	−9.6%	+13.1%	−10.3%	+10.9%	−20.2%

[1] All time peak. [2] Lowest since April, 1922. [3] Lowest since October, 1922, due to shutdown of six Mid-Continent States. [4] Stocks, November 7, 1942.

finery output increased, stocks of the light fuel oil were expanded 540,000 barrels between November 6 and November 13, in rising to 45,316,000 barrels. But the latter amount was 5,217,000 barrels or 10.3 percent less than the 50,533,000 barrels on hand November 14 last year.

Residual fuel oil production amounted to 8,103,000 barrels in the week ended November 13, 1943, the output having been 32,000 barrels less than in the previous week, although approximately 800,000 barrels or 11 percent greater than production in the week ended November 14 last year. In spite of comparatively large production of this urgently needed war product, there is continued difficulty in supplying demand, and stocks were further drawn upon in the week of November 13, 1943, to the extent of 904,000 barrels. This left on hand only 62,647,000 barrels, a new low for recent years. The present inventory is approximately 16,000,000 barrels or 20 percent less than the 78,543,000 barrels in storage November 14 last year.

East Coast

East Coast heating oil stocks are sufficient to meet rationed demand, although less than 60 percent of normal, the weekly PAW report disclosed November 18.

Heating-oil stocks increased 3 points during the week ended November 13 to 59.7 percent of normal, and kerosine stocks increased two points to 52.9 percent, but gasoline supplies dropped 3 points to 36.6 percent and residual fuel oil decreased 1.6 points to 78.3 percent.

Supplies for District 1 are being maintained close to programmed levels, it was reported. During the week an average of 417,650 barrels moved into the area daily by pipe line, with the Big-Inch operating at 288,000 barrels a day, or close to its rated capacity. Tank-car deliveries turned sharply upward, averaging 758,131 barrels daily, against 714,037 barrels during the preceding week.

Natural Gasoline Output At Peak in September

Daily average production of natural gasoline and allied products reached a new high in September at 10,503,000 gallons daily, compared with 10,027,000 gallons in August, it was disclosed last week in the monthly report of the Bureau of Mines.

New or additional production of several large cycle plants in inland Louisiana, Texas Gulf and the rest of Texas, as well as marked gains in the Appalachian and Panhandle districts were responsible for the increase, it was explained.

Total production of light products in September included 176,190,000 gallons of natural gasoline against 193,036,000 gallons in August; 59,136,000 gallons of cycle products against 54,726,000 gallons; 15,120,000 gallons of iso-butane and natural gasoline and cycle plants against 13,608,000 gallons; 64,638,000 gallons of other liquefied petroleum gases against 59,472,000 gallons; 13,944,000 gallons of liquefied refinery gas at refineries against 13,692,000 gallons, and 8400 gallons of benzol, unchanged.

Stocks at both refineries and plants and terminals declined during the month, the former dropping from 112,266,000 to 106,764,000 gallons and the latter from 93,240,000 to 91,602,000 gallons, the bureau announced.

FOREIGN DEVELOPMENTS

Search for Oil and Gas Active in West Canada

The plains areas of Central and Southern Alberta, Western Canada, currently have under way an exceptionally large amount of wildcatting, as well as further development of established fields.

Of the 23 new well locations made in Alberta in October—nearly 1 a day and perhaps a record for any 1 month—there were 9 in the Vermilion oil field, 2 in the Viking gas area, and 1 in the Lloydminster oil area, 2 in the taber field, and 1 each at Wrentham, Pinhorn, Pincher Creek, Grassy Lake, and Erickson Coulee while the Turner Valley field in the foothills west of the southern plains accounted for 4.

Due to test a hitherto undrilled section of Southern Alberta is the wildcat of Dominion Oil Company 3 miles south of Wrentham and 35 miles southeast of Lethbridge, on the Canadian Pacific Railway. This wildcat carries the new search for oil within 10 miles of the old Skiff oil area, where Devenish Petroleums Limited drilled several wells between 1927 and 1930, encountering non-commercial production of heavy oil, although in 1930 about 2275 barrels were produced. The heavy oil involved is of a grade now much in demand.

Farther east and south, McColl-Frontenac will put down a well at Pinhorn.

Although Lethalta Company some years ago got shows in a well 4 miles away, Dominion failed to get production in its Chin-Province test, and the well has been abandoned.

Dominion is expected soon to complete its new Taber well, and Mid-Continent has two wells drilling in the same field. Commonwealth is expected to enter Taber, also, attracted by the producing wells that yield better than 10,000 barrels a month, while the cheap drilling likewise is a magnet.

Lion Oil Company, newcomer in the Taber-Chin field, has built camp for a well there. Imperial-Clancey No. 2 on the southeast extension of the Taber field is being carried to the Madison lime after a mixture of oil and water was encountered in the so-called Taber sands.

Imperial Oil is showing increased interest in the Southern Alberta plains and will drill at Grassy Lake, 18 miles east and 9 miles north of Taber and 6 miles west of the Bow Island gas field. Imperial also will drill in the Erickson Coulee field, east of Coutts 20 miles, on the Alberta-Montana border. Imperial some 12 years ago drilled a well in Erickson Coulee and got a strong flow of gas. Now another test for oil will be made in the same area. Erickson Coulee lies northeast of the Kevin-Sunburst field in northern Montana.

The Rogers-Imperial well in the same general area had a flush gas production of 50-million cubic feet a day and considerable gas was exported to the United States. The old Dead Horse Coulee well put down by Imperial had good oil and gas shows. Now, it seems, this border area is to again move into the active column.

Far to the west, Red Coulee wells are still producing steadily, and at Del Bonita, Pacific Oil & Refining Company is coring porous Madison limestone objective at 5052 feet, finding excellent oil and gas saturation.

Imperial Oil has staked location for its third Kinsella-Viking area venture, Viking 3, 3½ miles south and 4 miles west of the Anglo-Kinsella test (a dry hole), and 9 miles east and 10 miles south of the drilling Imperial-Viking 2.

In the Athabaska district of northern Alberta, East Crest Oils Limited and Davies Petroleums Limited, have begun drilling Deca 3, located 800 feet east and slightly north of the old Athabaska well, Deca 1, which had a good oil sand but which was abandoned. Oil saturation is expected in No. 3 at about 1650 feet.

Fort Norman Production Up Sharply This Year

Further material increase in production is in prospect for Fort Norman, Northwest Territories, Canada, farthest north oil field in the world, following a sharp gain in the first half of this year.

The field's crude output, formerly kept secret, was 89,929 barrels in the first six months of 1943, almost 10 times the yield of 9674 barrels in the like months last year, the Canadian Bureau of Statistics has reported.

Although Fort Norman will supply oil in substantial volume for the new pipe line through the Canadian hinterland to Whitehorse, Yukon Territory, refinery base, for military needs in the joint defense of Canada and Alaska, the above figures do not include output of wells drilled and then capped during construction of the pipe line.

Big Lube and Aviation Gas Refinery in Canada Opens

The new aviation gasoline and lubricating oil refinery of British American Oil Company at Clarkson, Ontario, officially opened November 15.

This project, costing from eight to nine million dollars, was built without government subsidy.

The project was first begun as a lubricating oil plant, with motor gasoline as a by-product. All the designs and blue prints were ready for work on that basis. Plans were changed at once to meet the war need, and the result is that this lubricating oil plant is unique in the fact that no motor gasoline will be manufactured at all.

Shortage of Oil Workers Is Problem in Canada

As a result of a protest by the Alberta Petroleum Association and representations to Ottawa, steps are being taken to alleviate a serious labor shortage in Turner Valley and other Alberta fields.

It was pointed out by oil men and officials of APA that the shortage of experienced workers was so acute that suspension of operations at some wells in Turner Valley was threatened.

It was declared 150 men were needed in Alberta fields at once, including 115 at Turner Valley.

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U. S. Field Operations

Illinois

Hamilton County Well May Be Rural Hill Extension

A new pool or an extension of the Rural Hill pool of Hamilton County was in prospect this week at Bailey Vinson's Oglesby 1, NW NE SW 17-6s-6e. Pipe has been set for a test of Aux Vases sand which showed good saturation in a core. A drill-stem showed 120 feet of oil and 5 feet of drilling mud in one hour. The well made gas in 15 minutes. Total depth is 3141 feet.

Franklin County: J. W. Murchison's Franklin County Coal Company 1, NE SW SW 11-5s-2e, a discovery northeast of Whittington, is testing after swabbing 30 barrels of oil in 24 hours from Lower O'Hara which was perforated following a plugback to 2874 feet. When acidized with 500 gallons the well filled 50 feet with oil in 30 minutes and then was given 2000 gallons of acid before swab test.

Fayette County: J. J. Callahan and associates are continuing to test Littleton 1, NE SW 22-5n-4e, a pool opener three miles north of Farina, after placing the well on pump. In a recent test the well pumped 10 barrels of oil and 31 barrels of water in 24 hours from Benoist sand at 2346-58 feet. The production is falling below expectations.

Edwards County: Superior Oil Company's Lipper 1, NW NE SE 28-1s-14w, 4 miles northeast of the Albion pool, gained in importance this week and indicated a new pool of considerable importance when it swabbed 182 barrels of oil in 24 hours from Lower Cypress sand after cleaning out to 2730 feet. The Cypress was tested with a 60-quart shot at 2700-25 feet after McClosky lime proved non-commercial in a test at 3,038-39 feet. The same company's Jack 1, SE. SE SW 5-2s-14w, another prospective pool opener, is waiting on cement after a 60-quart shot in Benoist sand at 2845-60 feet made a squeeze job necessary. After the shot the well bailed 1½ barrels of fluid per hour of which 50 percent was salt water.

Phillips Petroleum Company's Fieber 1, SE NE SE 6-3s-10e, wildcat, is preparing to run a second drill-stem test of McClosky lime encountered at 3251-60 feet. On the first drill stem, the well made 90 feet of oil and 900 feet of salt water in 70 minutes. Total depth is 3,434 feet.

White County: C. Skiles' Hoerner 1, E½ NW NE 25-3s-10e, is a Benoist pool opener. The well swabbed 100 barrels of oil in 3 hours from the sand with total depth of the hole 2978 feet. Operator continues to test.

Coles County: Lario Oil & Gas Company's Stuart Scott 1, SE SW NE 25-12n-7e, just south of Mattoon on the largest structure in the state, has been abandoned at 2153 feet. The only show of oil was in the Cypress sand and it was non-commercial.

H. V. Daugherty is moving in tools on a recently acquired block of acreage approximating 1500 acres. The block centers around 28-12n-8e but the exact location has not been announced. The well will be the third wildcat in the same general area in the last four weeks.

Shelby County: The Texas Company's Ferguson 1, NW SW NE 18-11n-6e, a wildcat three miles southeast of Windsor in an area long regarded as favorable, was drilling below 1500 feet but had found no reliable marker for the area.

Indiana

Small Producer Opens Pool in Spencer County

W. B. Bateman's Ernst 1, SE NE SW 8-6s-4w, has been named the discovery of the Newtonville pool in Spencer County, having pumped 10 barrels of oil in 24 hours during initial test of Jackson sand at 796-803 feet, the latter figure total depth.

Operations in Indiana dropped this week from 76 to 69. Thirty-nine wells were drilling, 18 were locations, 5 were rigging tools and 7 were inactive. First reports totaled 4 of which 1 was a wildcat.

Twenty-seven wildcat operations were recorded and they included, 12 wells drilling, 9 locations, 2 tests rigging tools and 4 inactive.

Two producing wells were completed for total initial production of 41 barrels of oil. Seven holes, including 3 wildcats were dry, and 2 locations were abandoned.

Kentucky

Operations Continue Steady and Quiet

Kentucky oil activity was comparatively quiet this week as operations moved up from 82 to 83.

Seventy of the wells were drilling and 7 were locations while 6 tests were rigging tools. There were no inactive tests. First reports totalled 11, a drop of 8 as compared with last week.

Wildcat operations fell from 30 to 26 of which 24 were drilling and 2 were locations. Only 1 wildcat first report was recorded.

Two producers were completed with initial production of 155 barrels of oil daily. Eight wells including 5 wildcats were completed as dry holes.

Bureau Issues Report on Oklahoma Water Flooding

Results of studies of 73 water-flooding projects in Oklahoma oil fields which resulted in the recovery of more than 15,000,000 barrels of oil through the injection of 200,000,000 barrels of water on approximately 350 leases, were made public last week by the Bureau of Mines.

The report, titled a "History of Water-Flooding of Oil Sands of Oklahoma," was issued, it was explained, "to stimulate interest in secondary recovery methods for obtaining petroleum from oil sands, now important as a war measure."

The survey covered the engineering history of 73 projects, 61 of which were still in operation at the time of study.

Kansas

Arbuckle Productive as Second Pay at Lieker

Phillips Petroleum Company's Wassinger 1, C N½ NE NE 15-15-18w, has added Arbuckle production to the Lieker field in Ellis County with production of 6 barrels from a hole bottomed at 3583 feet, 5 feet in the lime. Previously the well had encountered porosity in Kansas City-Lansing lime, from which the field heretofore has produced, and it is thought the well could be produced commercially from both formations.

Nemaha County: Ohio Oil Company's Lamporter 1, C NE SW 3-2s-14e, on the edge of Forest City Basin, reported a show of heavy oil in Hunton lime, topped at 2826 feet. Casing trouble developed and the pipe is being broken out. The well had been planned to test Arbuckle and hole has been drilled to 3100 feet. Test of the Hunton show has not been made.

Saline County: Margay Oil Company's Anderson 1, CNW SW 3-16-3w, located on a possible trend from Lindsborg field north from McPherson County, drilled a showing in Viola lime and is preparing to test.

Oklahoma

Cleveland County Discovery Well Still Being Tested

Mid-Continent Petroleum Corporation's Harris 1, NE SE SW 29-10-3w, Cleveland County, best appearing strike in Oklahoma so far in 1943, produced 60 barrels hourly on a 3-hour flow through 3/4-inch tubing choke. Accompanying the production was an estimated 18,000,000 cubic feet of wet gas. The formation is not yet clean and some of the water in the space between tubing and casing cuts the production, and with the high gas pressure this has caused some difficulty. Formation pressure has not yet been determined although from available data, the pressure is unusually high for this section of the state, very probably approaching the full hydrostatic which at the depth of the pay, 8792 feet, would be near 3750 pounds per square inch at the pay. While gravity of the oil has not been ascertained, it is relatively high and typically Wilcox in character.

Stephens County: Skelly Oil Company's Temples Unit 1, CNW SE 26-1s-5w, in the Velma area, has opened a new high-volume gas pay at 6124 feet. The well blew out of control at the above depth although men of the area feel that the production might be from the Viola lime, drilled at 5033 feet. Hole was being carried to Bromide, productive in other wells in the area. Volume as estimated during the blow-out, since controlled, was 65,000,000 cubic feet.

Garvin County: Pauls Valley field has had the south flank limited at Cities Service Oil Company's Tipton 1, NW NE NE 6-3n-1e, which drilled Pennsylvanian sand at 4222 feet, but had to be put on the pump immediately in contrast to flowing wells up-structure. Diagonally

northeast in the next township, but less than a mile from Tipton 1, Stanolind Oil & Gas Company's Cashion-Unit 2, SE NE SE 31-4n-1e, had only salt water in the prospective pay at 4134 feet.

Caddo County: Medrano sand production has been extended again in West Cement in the Sherritt area, recently proved by Gulf Oil Corporation. The new well is Ray Stephens' Pohlman 1-A, NE NE NW 33-6n-10w, which is a near completion after making a 3-hour test to indicate about 50 barrels hourly from Medrano sand at 5922 to 6050 feet.

Washita County: Gulf Oil Corporation's Hopkins 1, deep test in the southwest corner of Oklahoma, is plugging back after drilling into Arbuckle lime at 9540 feet and carrying hole to 6591 feet without encountering shows in the thick lime. It went from Pennsylvanian sediments into Arbuckle. An electrical survey gave a "kick" at 6591 feet in some granite wash stringers and the hole has been plugged back to give these a test. In case these fail to pay off, it can be plugged back further to a shallow wash section which indicated a small well in incomplete tests made while drilling.

West Texas

McCamey Field Has Oil in Silurian

Texas Pacific Coal & Oil Company's Lane 52-A, initial deep test for the McCamey field, Upton County, opened the second Silurian producing area in Texas in flowing 168 barrels of 43.8-gravity sweet oil in 5 hours. The flow ceased at the end of this period, but was revived by swabbing for flow of 94 barrels oil the next 17 hours. Production followed treatment with 9000 gallons of acid through perforations in the lower section of the saturated zone at 7160-90 feet. Additional perforations are to be made at 7125-60 feet, then reacidized. This strike originally was completed in the field's regular 2100-foot Permian lime, and was deepened to Ellenburger water at 8358 feet. It is 41 miles southeast of the two-well Shipley deep area, Ward County, which held the distinction of being the only area in the state to produce from Silurian, occurring between the Devonian chert beds and the Upper Orovician.

Development of Pre-Permian production in the McCamey field is timely as numerous leases are nearing depletion stage and owners will be inclined to co-operate in exploring the deeper pay, while the Ellenburger remains a prospective producing zone elsewhere on the broad anticline. Texas Pacific Coal & Oil Company fortified itself with considerable acreage within and near the field before undertaking the deep test, which was supported by some of the operators.

Pecos County: Bryce McCandless et al's Cordova-Union (Gulf) 1-101, prospective shallowest Ordovician strike for the Permian basin, was awaiting swabbing truck after perforating oil saturation at 4012-37 feet in Ellenburger, topped at 4005 feet by driller's log. Drill-stem test at 4043-98 feet had 35-gravity oil with brackish water. Pipe was landed at 4093 feet, and the water was confirmed in deepening to 4103 feet. This wildcat is on the southeast edge of Owego, and 7¼ miles west by north of the Wentz 2-well pool, nearest Ordovician producing area.

Andrews County: Two outposts for the Mabee pool are nearing completion by The Texas Company on its 14,000-acre block. The company's Mabee 2, 5800 feet southwest of its discovery pumper, which is awaiting potential test, showed nominal oil stain and porosity in pulling core at 4730 feet, and was due to run electric log and set pipe to drill in with tools. Mabee 3, situated 6500 feet east by north of the discovery, was running tubing to test at 4710 feet with 7-inch at 4637 feet, having topped San Andres at 4660 feet, or 26 feet low. Both pending completions are low on the pay zone. Mid-Continent Petroleum Corporation's University 1-B, major southeast extension for the Fullerton field that has been in process of completion for some weeks after reaching water at 7375-7458 feet, is rated at 179 barrels initial through 12/64-inch choke after acidizing broken pay at 6878-7177 feet. Leases between this outpost and the field proper are receiving an active drilling campaign. Extension of the Fullerton field 1½ miles northeast by C. U. Bay et al's Bitler-Lowe 1, which is showing for average potential from broken pay at 6900-7199 feet, has been followed by authorization of a test ⅝-mile south by Magnolia Petroleum Company and by Humble Oil & Refining Company on its 640-acre lease between the extension and the field proper. Fullerton Oil Company is seeking a north extension in starting Logsdon 1, C SW SW PSL 7, Block A-32.

Gaines County: Honolulu Oil Corporation's Homann 1, prospective oil strike from lower section of San Andres, entered water at 5452-57 feet and is due to be abandoned. A small volume of free oil appeared with brackish water when tested at 5410 feet with pipe set at 5395 feet. Continental Oil Company's Jones 1-A, and Stanolind Oil & Gas Company's American Warehouse 15, situated in northwest and northeast sector of county, were drilling at 10,650 feet and 11,950 feet, respectively.

Hockley County: Woodley Petroleum Company's Harless-Stanolind 1, 21 miles northeast of Slaughter field, nearest production, rated at 30 to 50 barrels oil daily after acidizing with 8000 gallons by stages in Clear Fork broken saturation at 5879-5952 feet, having plugged back from dry lime at 5955 feet. It will probably be deepened as the yield is not of commercial volume. Globe Oil & Refining Company, which is engaged in an active exploratory campaign in the Permian Basin to obtain reserves for affiliated Middlewestern refineries, abandoned its Ellwood 1 in Clear Fork at 6305 feet. Brown & Wheeler, Inc.'s French 1 was drilling dry lime 6115 feet.

North Texas

New Pools Opened In Three Counties

Preliminary production tests confirmed the opening of Strawn oil pools in Montague and Archer counties, and a shallow Ellenburger strike in Southwestern Cooke County. The deep prospect in Hardeman County failed to respond to initial acid treatment.

Montague County: Continental Oil Company's Spencer 1, E. Green Survey and 2¾ miles north of St. Jo, is showing for a pumper from sand between 2758 and 2773 feet after plugging back from schist at 4342 feet. This wildcat yielded 41 barrels of oil and 15 barrels of water on 15-hour swabbing test, with indication that the water is rotary fluid absorbed by the formation. It is situated on a strike between the Bowers and Bindel pools.

Archer County: George W. Cooper et al's Parkey 1, NE SE SE SP 1, 3 miles east of Mankins, opened a new Strawn area near dry holes in showing for 10 barrels of oil hourly on swabbing test of sand at 4331-51 feet, having excluded broken saturation at 4113-18 feet in lime and at 4118-72 feet in sand in landing pipe at 4329 feet. This strike is 2 miles north by west of the Taylor deep pool, which yielded an Ellenburger failure when J. A. McCarty and J. P. Coleman's Taylor 2-A, north offset to their flowing Ellenburger discovery, tested water at 4982-5011 feet. The latter will be plugged back to perforate Mississippian saturation, topped at 4922 feet.

Cooke County: E. R. Perkins-W. R. Bourland and Phillips Petroleum Company's Danglemyer-Drane Foundation 1, Eleanor Langford Survey, 1-1/3 miles southwest of the T.C.U. pool, flowed 91¼ barrels of oil on 2½-hour gauge through ¾-inch choke after washing Ellenburger dolomite at 2173-81 feet with 200 gallons of acid. Other Ellenburger strikes in the general area proved small, but afford attractive crude yield per acre. The Winger sand sector of the Walnut Bend field accounted for its 27th consecutive oil producer with completion of Sinclair Prairie Oil Company's J. M. Laura (McDaniel) 1, Lot 2, League 76, northeast outpost, flowing 691 barrels of 31.7-gravity oil potential through 2-inch from perforations in Winger saturated sand at 5583-95 feet. Seitz-Comegys & Seitz, Inc. et al's Blankenship 1, Section 46, failure in the discovery pay of the South Walnut Bend pool, was drilling shale at 4840 feet. Search for production on prospects to the north and south of the Walnut Bend field now involves a quartet of deep wildcats. M. P. Springer and C. E. Marshall and Sinclair Prairie Oil Company account for the pair tests to be drilled north of the structure, while Northern Ordnance, Inc.'s Haney 1 and Jim Anderson & Kimbell's Austin-Holcomb 1, situated 7 miles and 3½ miles, respectively, east of Gainesville, will be deep tests.

Hardeman County: Humble Oil & Refining Company's Dodson 1, 3 miles northwest of Chillicothe, yielded a nominal show of oil and gas before and after using 1000 gallons of mud-acid in arkose sandstone at 6494-6512 feet, and was awaiting outcome of fluid-rise test. This wildcat was plugged back from dry conglomerate at 7301 feet to 6600 feet, then landed 5½-inch at 6490 feet.

King County: Humble Oil & Refining Company's Bateman Trust 2, ¼-mile northwest of the company's recent flowing discovery for the county, filled 100 feet with oil after drilling plugs from 5-inch at 3691 feet, but filled 3000 feet with salt water after using 4000 gallons of acid in discovery pay at 3698-3709 feet. Plugback operations are under way. Both wells bottomed at same subsea depth of minus 1920 feet.

Young County: Sohio Producing Company's Morrison 1, ¼-mile east of Deep Rock Oil Corporation's Mississippian discovery on Morrison tract, recorded sharp dip in structure and abandoned in Ellenburger at 4635-4737 feet.

East Texas

Robertson County Wildcat Travis Peak Gas Show

Production from the Basal Trinity series along the Balcones fault region between the Mexia and Luling districts reached the promising stage the past week in western Robertson County when A. G. Hill and H. L. Hunt's Anderson - Magnolia 1, Joseph Webb Survey 51, 3 miles northwest of Calvert, showed gas through a hole full of mud at 7109 feet. The last 4 feet of formation cut soft, causing loss of rotary returns that has delayed progress on the test. The gas was encountered in Travis Peak sandstone, topped by samples between 7006-37 feet with elevation of 326 feet, after cutting through an estimated 1200-foot fault displacement that eliminated the entire lower Glen Rose series logged by Magnolia Petroleum Company's Doremus 1, a 7217-foot Travis Peak failure situated 3700 feet to the southeast.

The Calvert deep prospect is on acreage assigned by Magnolia Petroleum Company from its original 18,000-acre block. The latter drilled W. C. Anderson 1, Jacob Fisher League, early this year with nominal show of oil in Edwards limestone, and abandoned at 5198 feet. The company's Doremus 1, located 1920 feet to the northwest, confirmed the presence of the unusual fault, and the location by Hill and Hunt was calculated to cut through the fault to the upthrow side near or opposite the Travis Peak. This third test will set pipe to try for completion, and regardless of the outcome, more prospecting will occur in the immediate area.

Hunt County: Humble Oil & Refining Company's Rutherford 1, 4½ miles southwest of Greenville, was swabbing a small amount of black oil with fluid level, consisting mostly of fresh water, standing 3350 feet from surface after perforating at 4751-55 and later at 4731-38 feet opposite Rodessa porosity. This wildcat was drilled to schist at 7483 feet with elevation of 540 feet, and plugged back before landing pipe at 4790 feet. Stanolind Oil & Gas Company's Wilkins 1, 2 miles southwest of Commerce, abandoned in Paluxy water sand at 4416-54 feet, having cut through fault at 3738 feet with elevation of 494 feet.

Van Zandt County: Superior Oil Company of California's Groves 1, 4½ miles north of Canton, was running pipe to test possible production in Travis Peak, topped at 8480 feet, after plugging back from 9002 feet. Considerable lease and royalty trading has occurred in the general area. Delta Drilling Company et al's Gipson-Echols 1, 3 miles northwest of Grand Saline, logged Fort Worth lime at 5930-60 feet, and was drilling 6130 feet on Travis Peak objective.

Manziel Pool: Magnolia Petroleum Company's Taylor 1, major east extension for the original sector of the pool, was flowing 22 barrels of oil hourly through ¼-inch after perforating main Paluxy pay logged at 6328-32 and 6335-47 feet with water below 6382 feet. P. G. Lake et al's Pollard-Magnolia 1, W. H. Secrest Survey and in the northeast extension, abandoned at 6440 feet, having only light oil saturation at 6372-78 feet with first water at 6427 feet. Sun Oil Company's Scoggin 1, west outpost, is the first prolific completion, having made 858 barrels of 27.8-gravity oil potential through ¼-inch from perforations at 6345-57 feet. Shell Oil Company's Whatley 1, southeast outpost, logged massive anhydrite at 7870-8062 feet, and was coring for Rodessa at 8120 feet.

Southwest Texas

Mayo Field Extension Flows 149 Barrels Daily

New fields and new pays are being opened in the Lower Texas Coast area with a number of wildcats being drilled and more slated to start. Humble Oil & Refining Company has completed a half-mile southwest extension to the Mayo field in Jackson County, with Branch 9. Perforated at 5402-10 feet, the well flowed 149 barrels of 29.8-gravity oil through ⅛-inch choke with 800 pounds pressure on tubing, the gas-oil ratio 335/1. This extension is 660 feet out of the northeast corner of C. Culina Survey 14. Total depth is 6502 feet, plugged back depth being 5442 feet.

Victoria County: Sunray Oil Corporation has completed a southwest extension and new pay in the Placedo area with Sklar 1 flowing 65 barrels daily through ⅛-inch choke, tubing pressure 750 pounds, casing 1600 pounds, the oil being 41.8-gravity. The new pay was logged at 6698-6716 feet and perforated at 6699-6702 feet; total depth 7010 feet, plugged back to 6710 feet. The new pay and extension is 2 miles southwest of Placedo townsite, 330 feet from northeast line of block 5, SA&MG Survey 7.

Refugio County: Potential test is reported to have been run on P. R. Rutherford's Weiss (Zengerle) 1, discovery 3 miles southeast of Woodsboro and 2 miles northeast of LaRosa field. Perforated at 6185-87 feet in oil sand logged at 6183-90 feet, it flowed 142 barrels daily through 7/64-inch choke. More drilling is expected soon since Phillips Petroleum Company and R. C. Lipscomb hold close-in acreage. Fred M. Wood is drilling a wildcat one mile west of the discovery.

Live Oak County: Continental Oil Company has set 7-inch casing in Somerset Land & Cattle 1, wildcat 15 miles southwest of George West. The well attempted to blow out from a Wilcox sand section at 8170 feet. It was controlled once and began to leak even after the blowout preventer was closed. The well was then killed to set protection pipe.

San Patricio County: Possibilities of a new oil field are looming 2 miles north of Odem after Texas Conservative Oil Company's Gaines 1 recovered 40 feet and 40 feet of muddy oil on a drill-stem test at 5434-38 feet. Sand was found at 5432-52 feet. Operators are nearing the 7200-foot level, the contract depth. Location of the discovery is in the west corner of block 22, Welder & Odem subdivision.

Discovery: Seaport Oil Company is drilling to contract depth in Bennett 1, wildcat discovery of a new field 1 mile northwest of West Ranch field and 1½ miles west of Vanderbilt townsite. A drill-stem test at 5060-66 feet recovered 2000 feet of pipe-line oil in 15 minutes with 80 pounds working pressure. This discovery is in the northeast corner of a 79-acre tract in block 30, J. M. Bennett Ranch, R. Musquez grant.

Texas Gulf Coast

Wildcat Work Shows Definite Pick Up

Wildcatting is showing a definite pick-up in the Texas Gulf Coast area with a number of tests projected within the past week. These locations are in widely scattered areas and represent tests that will be made in Frio, Cockfield, Frio and Wilcox sands. Jack Frazier and John Mayo are preparing to drill a Wilcox test in Tyler County, Rice Estate 1, on a Stanolind Oil & Gas Company farmout in James Sims survey. It is projected to 9000 feet which will be deep inside the Wilcox.

Five miles west of Nada in south portion of Colorado County, Ohio Oil Company is preparing to drill McDermott 1 on a 695-acre tract in AB&M 792. Housh & Thompson are contractors. It will be a Cockfield sand test.

On the southwest flank of Davis Hill dome in Liberty County, W. W. West is preparing to drill Fee 2, 380 feet from the north line and 250 feet from west lines of 586-acre tract in J. D. Martinez survey. West recently drilled a 8420-foot test in the area, south of the new location.

Chambers County: Sun Oil Company has applied for permit to deepen an abandoned hole in Seabreeze area. Acom 1 was drilled earlier this year to 8335 feet, but operators are seeking to carry it to 11,000 feet to make thorough test of Frio sands. It is on a 640-acre lease in HT&B 103.

Matagorda County: The North Markham field is rapidly developing into a major reserve. Sun Oil Company last week completed a producer to extend the field eastward, while the same company has staked another eastward extension location. The test is Braman 9 is 4620 feet southeast of northwest line and 5640 feet northeast of southwest line of 2903-acre lease in Hosea H. League. The extension well, Braman 8, flowed 345 barrels through 12/64-inch choke from perforations at 7710-25 feet. Total depth is 8100 feet, 5½-inch set on bottom.

Austin County: Pan American Production Company has set casing to make tests in Austin College 1, wildcat on southwest flank of Raccoon Bend field. Operators found two 10-foot sand bodies near top of Wilcox, topped around 7295 feet. Shows were found at 7300-10 feet and 7317-27 feet, although drill-stem tests were not made. Total depth is 9515 feet with 5½-inch casing set to 7685 feet.

Another well that will create some interest is Sun Oil Company's Pratt 4 on 195-acre lease in old Livingston field of Polk County that will be deepened. Old total depth is 4256 feet while permit says the hole will be drilled to 7350 feet.

South Louisiana

Well in Bear Field Produces Two Levels

The first dual completion has been made in the comparatively new Bear field of Beauregard Parish, with the result that a new gas sand has been opened. Phillips Petroleum Company's First National Bank 2, Section 22-6s-9w, perforated at 6104-06 feet and flowed

948,000 cubic feet daily through 11/64-inch choke with 2100 pounds pressure on casing. Another set of perforations was made at 6517-19 feet and the flow was 205 barrels of oil daily through 9/64-inch choke. The gas-oil ratio mounted to 1250-1, tubing pressure being 950 pounds. The oil was 43.1 gravity.

Drilling of deep wildcats in Vermilion Parish is increasng with two tests projected. Union Oil Company is preparing to drill Louisiana Furs 2-C, in Freshwater Bayou area which is southeast of East Whitelake field. The Texas Company is preparing to drill a 11,000-foot wildcat in Vermilion Bay, the location being State-Bay 1 on lease 340. It will be a Miocene sand test.

Discovery: Potential has been completed on the Rosedale discovery in Iberville Parish, Sugarfield Oil Company's Iberville Mortgage and Loan 1, Section 74-7s-10e, which was perforated at 10,009-12 feet and flowed 215 barrels daily through 7/64-inch choke with 1625 pounds pressure on tubing, casing 1700 pounds. This hole was originally drilled by Humble Oil & Refining Company in 1939 and abandoned at 10,025 feet.

Terrebonne Parish: Potential has been completed on a semi-wildcat that extended production 1 mile east of Northeast Gibson. The Jackson Estate 1 flowed 225 barrels daily through 9/64-inch choke. Perforations were made at 9280-90 feet. Tubing pressure mounted to 1100 pounds, casing to 1200 pounds. The new producer is in Section 25-17s-15e, and was drilled by Falcon-Seaboard Drilling Company and William Helis.

California

Los Angeles to Permit More Drilling in City

Municipal authorities of Los Angeles have started granting permits to drill within the city limits. Seaboard Oil Company has been granted a lease covering the whole of Elysian Park, to be directionally drilled. This park, just north of the center of metropolitan Los Angeles, covers about 640 acres.

More than a year ago Shell Oil Company drilled a deep test in the Wilshire district. The well proved a failure, and thereafter the city administration has refused all applications for further wildcatting.

Since the lease to Seaboard Oil Company, two other areas, in Wilmington, were given permits. Half a dozen or more other applications long in the files are now to be considered.

Fresno County: In the Raisin City area, Edwin W. and H. R. Pauley's 29-21, 29-15-18, found sand at bottom wet, and test of a higher interval 4800-4820 feet produced only a little gas.

Kern County: Cymric area, which has attracted attention lately with development of shallow production, now will be tested for deep zone possibilities. D. D. Dunlap Oil Company has staked Fritz Noel 1, NW SW 20-29-21, with Eocene announced as objective.

Union Oil Company's Rio Bravo area wildcat, Kernco 8-81, 8-29-25, met failure in the deep Stevens zone objective. Bottomed at 10,165 feet, a formation test of the interval 9621-9711 feet yielded negative results. Hole was plugged back to 5885 feet to test showings had at 5818-5855 feet.

Los Angeles County: General Petroleum Corporation's wildcat, Mendota 1, 22-3-16, Rice Canyon, at 6834 feet got into a hopeless fishing job and plugged back to 2076 feet for a test of minor showings. Difficult drilling conditions may discourage a second attempt to reach the deep formations.

Santa Barbara County: A large land deal that may be the forerunner of an extensive wildcatting campaign has been closed in West Elwood area through the acquisition of the 4500-acre Rancho Dos Pueblos by Signal Oil & Gas Company for a reported consideration of $645,000. There are two known structures on the property, but before undertaking any drilling it is understood the new owners will have comprehensive geophysical surveys made.

Michigan

Goodwell Pool Well Has Oil in Monroe

Pure Oil Company's Detroit Trust 2, E½ SW SE 8-14n-11w, Goodwell pool, Newaygo County, logged oil and gas pay in Monroe lime at 3434 feet, and at 3444 feet, after 48 hours shutdown, swabbed 10 barrels of oil and 17 barrels of water. While pay is not regarded as commercial it established potential Monroe pay for the first time in the pool, which has been developed so far only for Traverse lime production at 2800 feet. It is almost certain to lead to drilling Monroe tests higher on structure.

Midland County: Sun Oil Company's Zuchowski 1, S½ SW SE 21-15n-2e, Larkin Township wildcat, bottomed in Dundee lime objective at 3829 feet in water formation. Hole will be plugged back to 3300 feet for a test on the Traverse which carried an oil-gas show at 3225 feet.

Oil Hearing: Recommendations to reduce the oil output from 18,000 to 13,000 barrels per day in the Reed City field to stabilize reservoir pressure and check water encroachment will be considered at a hearing and advisory board meeting in Lansing, November 22.

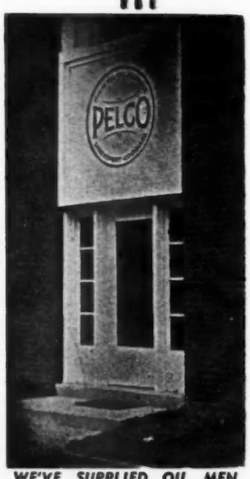
Rocky Mountain Area

Plan Tensleep Test At Big Sand Draw

Sinclair Wyoming Oil Company is moving in rotary for Unit 1, SW NW NW Section 14-32n-95w, in the Big Sand Draw field, Fremont County, Wyoming, for an important test of the Tensleep. The field was proved for gas in 1918 in the Frontier by Producers & Refiners Corporation, and 14 gas wells have been completed in 3 zones in the Frontier ranging in depth from 2300 to 3600 feet. Approximately 1000 acres are proved for gas in the Frontier. Gas from the field supplies franchises of the Northern Utilities Company at Riverton, Lander, Casper and other eastern Wyoming and western Nebraska towns to Bidgeport, Nebraska. Sinclair is unit operator of the field and controls the acreage covering the structure.

Mister, Can You Spare a Minute?

We find it difficult, if interesting—this gesture of tapping a man on the shoulder to ask for business. But that's advertising. And selling. Usually he keeps walking. If he does pause to consider, accident or convenience may be the real explanation, so that experience teaches the salesman humility. But as the years go by, for one reason and another, more men TRY PELCO FIRST, seeking something more, perhaps, and finding something more than ungarnished supplies and equipment. So there are 35 growth rings in our little oak of free private enterprise. We wouldn't like to see it hacked down by the sharp axe of bureaucracy. Or ringed to die.



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ARKANSAS

Columbia County—Atlanta west extension: Tide Water Seaboard's E. M. Hutcheson B-1, 17-18s-19w, flow 180 bbls, 9/64-in, perf 8221-51 ft, lime, failed in Cotton Valley.

Tide Water's E. M. Hutcheson B-1, c nw sw, 17-18-19, 180 bbls 9/64-in.

Columbia County—Dorcheat-Macedonia: Stacy et al's Martel Unit 2, c nw sw 10-18-22, lime 76 bbls in 20 hrs, 11/64-in, 450 lbs, Cotton Valley, 2 bbls 66-gr, distillate per hr ¼-in.

Columbia County—Smart: G. H. Vaughn's Rhinehart 4, 11-15s-20w, pump, est 200 bbls 24 hrs, Tokio, 2500 ft.

T. W. Lee's C. G. Hall 2, 11-15s-20w, Tokio, td 2500 ft.

Stephens County—Smart: G. H. Vaughn's Bailey No. 4, c nw se ne 11-15-20, placing on pump.

Union County—Hillsboro: D. V. Lacefield's Union Saw Mill Co. 1, c sw se nw 13-10-14, pump 35 bbls, 20% salt wtr, td 2263 ft.

Union County—Mt. Holly: Lion Oil Refining Co.'s W. F. McDonald 1, c se nw 10-17-18, 3.3 bbls per hr, ⅛-in.

Union County—Rainbow: Curtis Kinard's L. T. Kelley 1, c se ne sw 9-17-14, abnd 3003 ft.

CALIFORNIA

Fresno County—Coalinga: Shell's 128-26, se sw sw 26-19-15, pump 186 bbls 22-gr, perf 2475-2391, 2372-2340, 2305-2143 ft, td 2525 ft.

Standard's 85-13D, sw ne sw 13-20-14, pump 11 bbls oil, 3 water, perf 761-908, 992-1105 ft, td 1110 ft.

Standard's 1-7E, nw ne ne 7-21-15, pump 10 bbls oil, 4 water, 6⅝-in 2783 ft, td 3092 ft.

Texas Co.'s California-Coalinga 1, nw nw se 18-20-15, pump 13 bbls, 110 ft perf 2290 ft, td 2290 ft.

Fresno County—Raisin City: Universal Consolidated Oil Co.'s Taylor 1, nw ne se 14-15-17, flow est 550 bbls 23.5-gr, 23/64-in, 1500/1250 lbs, perf 6232-38, 6255-88, 6304-12 ft, Kreyenhagen 5939 ft, td 6312 ft.

Fresno County—Riverdale: Amerada's Cerini 54-15, sw sw ne 15-17-19, flow 140 bbls 37.7-gr, 172,000 gas, 10/64-in, 1100/425 lbs, 98 ft perf 7920 ft, td 7930 ft, pb 7919 ft.

Kern County—Belridge, South: Belridge Oil Co.'s 11-34 nw nw nw 34-28-21, perf 554-810, 984-1250 ft, td 1402 ft, pb 1250 ft.

General Petroleum Corp.'s 32-2, nw nw ne 2-29-21, pump 76 bbls oil, 7 water, perf 540-624, 670-807, 860-967 ft, td 968 ft.

General Petroleum Corp.'s 40-2, se nw ne 2-29-21, pump 44 bbls 13-gr oil, 35 water, perf 635-728, 915-95, 1055-1154 ft, td 1155 ft.

Shell's TWA 8, se nw sw 1-29-21, pump 86 bbls oil, 10 water, perf 1092-1035, 1000-932 ft, td 1093 ft.

Kern County—Cymric: Honolulu Oil Corp.'s 8-25, sw sw sw 25-29-21, pump 45 bbls 11.4-gr oil, 95 water, 118 ft perf 1303 ft, td 1450 ft, pb 1310 ft.

Victory Oil Co.'s 73, sw ne ne 26-29-21, pump 11 bbls 12.1-gr oil, 7 water, perf 1065-1140, 1210-43 ft, td 1244 ft.

Kern County—Kern Front: Pacific Western's Robinson A-19, nw 22-28-27, pump 73 bbls oil, 12 water, 175 ft perf 2461 ft, td 2465 ft.

Standard's 48, se sw ne 15-28-27, pump 84 bbls 12.6-gr oil, 20 water, 250 ft perf 2290 ft, td 2299 ft.

Kern County—Midway-Sunset: Formax Oil Co.'s 23, nw ne sw 36-32-23, pump 75 bbls 13.6-gr, 431 ft perf 1150 ft, td 1150 ft.

Republic Petroleum Co.'s 7-46, nw nw ne 7-32-23, pump 124 bbls 20-gr, 242 ft perf 3082 ft, td 3083 ft.

Standard's 117-31E, sw se ne 31-12-23, pump 44 bbls 24.7-gr, 245 ft perf 2455 ft, td 2673 ft, pb 2460 ft.

Texas Co.'s 25-4, se nw nw 25-31-22, pump 12 bbls 17-gr oil, 3 water, 259 ft perf 2578 ft, td 2580 ft.

Kern County—Mount Poso: General Petroleum Corp.'s 21-31, ne se ne 21-27-28, pump 35 bbls 15.5-gr oil, 38 water, perf 1708-58 ft, td 1758 ft.

Kern County—Poso Creek-Premier: Standard's 2-2-21, 21-28-27, pump 62 bbls 12.6-gr oil, 5 water, 126 ft perf 2965 ft, td 2970 ft.

Los Angeles County—Dominguez: Union's Reyes 131, 660 ft s 2370 ft e nwc Reyes lease, gas lift 71 bbls oil, 90 water, perf 7150-7060, 7030-6953, 6920-6825, 6808-6685, 6660-20 ft, td 7995 ft, pb 7165 ft.

Los Angeles County—El Segundo: Standard's Gough 14, ne ne sw 7-3-14, flow est 1,000,000 gas, 6/64-in, 950/950 lbs, td 2310 ft.

Los Angeles County—Montebello: Standard's Baldwin 109, nw sw ne 1-2-12, pump 120 bbls oil, 50 water, 1006 ft perf 3070 ft, td 3075 ft.

Los Angeles County—Wilmington: General Petroleum Co.'s Ford 48, 3852 ft s 1118 ft e c/l Ford & Anaheim, flow 1012 bbls oil, 34/64-in, 370/550 lbs, 614 ft perf 5350 ft, td 5396 ft.

General Petroleum's Terminal 10, 5221 ft s 1945 ft w c/l Ford & Anaheim, 4-5-13, pump 192 bbls 14.2-gr, 106 ft perf 2644 ft, td 2645 ft.

Long Beach Oil Development Co.'s "W" 54, 190 ft ne'ly n/l Seaside Blvd. fr e side 25th Ave. thence 300 ft se'ly r/a, pump 190 bbls, perf 2626-2950 ft, td 3000 ft, pb 2955 ft.

Union Pacific's 226, 2627 ft s 2699 ft w c/l Ford & Anaheim, pump 130 bbls 16.4-gr oil, 75 water, perf 2407-09, 2429-86, 2506-58 ft, td 2658 ft.

Union Pacific's 228, 3155 ft s 2389 ft e c/l Ford & Anaheim, pump 315 bbls 28-gr, perfs 4930-84, 5019-5145, 5166-5210, 5225-5342 ft, td 5351 ft.

Orange County—Huntington Beach: Huntington State Co.'s State 4, 124 ft se'ly r/a to c/l Ocean and 169 ft wly r/a to c/l 20th St., flow 700 bbls 19-gr, perf 2561-3205 ft, td 3205 ft.

Southwest Exploration Co.'s State J-8, 1035 ft wly proj c/l Ocean fr c/l 23rd St., thence 123 ft nly r/a, flow 293 bbls 19.2-gr, 24/64-in, 650/1000 lbs, perf 2667-2927, 3087-4433 ft, td 4433 ft.

Standard's B-74, 2019 ft nwly along c/l Ocean fr c/l 23rd St., thence 364 ft ne'ly r/a, pump 28 bbls oil, 16 water, perf 2437-2532, 2678-2858, 2934-3038 ft, td 3295 ft, pb 3040 ft.

Santa Barbara County—Santa Maria Valley: Hancock Oil Co.-Bush's Rosenblum 5, ne sw nw 25-10-34, flow est 1030 bbls 15-gr, 938 ft perf 4578 ft, td 4578 ft.

Ventura County—Shiells Canyon: Texas Co.'s 142, ne ne sw 4-3-19, pump 79 bbls 34.4-gr oil, 103,000 gas, 301 ft perf 2620 ft, td 2623 ft.

Ventura County—Torrey Canyon: Union's Torrey 60, nw sw ne 5-3-18, pump 2 bbls 20.8-gr oil, 1 water, td 6146 ft, pb 2833 ft.

Ventura County—Ventura Avenue: General Petroleum Corp.'s Barnard 26, 240 ft s 415 ft w c/l 11, flow 417 bbls 25.8-gr oil, 140 water, 40/64-in, td 8958 ft.

Shell's Taylor 148, 2650 ft s 9150 ft w R.C.L., Cor. 11, flow 554 bbls rate, 150 water, 100/700 lbs, 814 ft perf 5596 ft, td 5600 ft.

CALIFORNIA WILDCATS

Kings County—Failure: Seaboard-Continental's Phillips 66-2, se nw se 2-19-22, Hanford area, sand and shale, abnd 6633 ft.

Los Angeles County—Failure: Melvin Hansen's 2, se sw se 24-2-10, Puente Hills area, sand and shale, abnd 1228 ft.

Orange County—Failure: P. M. Girard's Mark Fisher 1, nw nw sw 27-5-10, Greenville area, redrld 4550 ft, found hole jkd, abnd 5655 ft.

ILLINOIS

Clay County: W. C. McBride's Dehart 3, se nw sw 10-3n-7e, abnd 2629 ft.

W. C. McBride's A. H. Keck 3, nw se sw 26-4n-7e, Cyp 2605-18 ft, 41 bbls, 2618 ft.

H. S. Williams' Esty McGhee 2, ne nw se 22-5n-5e, AV 2344-54 ft, 175 bbls, 2358 ft.

Edwards County: Superior's M. Reid 1, sw ne ne 29-2s-14w, Cyp 2783-99 ft, 34 bbls, 3233 ft.

Ohio's Hayes 2, se se 4-1n-10e, salt wtr disposal well, abnd 3370 ft.

Fayette County: Carter Oil Co.'s Katie Owens 2, nw ne sw 29-8n-3e, salt wtr disposal well, abnd 3170 ft.

Carter Oil Co.'s Lucy Miller 6-1, se se se 36-9n-3e, gas input well, 1549 ft.

Hamilton County: Texas Co.'s H. Silverman 7, ne sw 16-3s-7e, AV 3190-3217 ft, McCl 3360-64 ft, 249 bbls, 3369 ft.

Nat'l Assoc. Pet Co.'s Rebstock 2, ne sw nw 26-4s-7e, AV 3290-3301 ft, 360 bbls, 3304 ft.

Texas Co.'s J. A. Irwin "B" 1, nw se ne 35-6s-6e, AV 3095-3103 ft, 3106-11 ft, 3113-19 ft, 27 bbls, 3120 ft.

Shell's Webb 4, ne ne sw 18-6s-7e, TS 2386-2428 ft, 414 bbls, 2432 ft.

Texas Co.'s J. C. Hall "B" 11, sw se ne 18-6s-7e, TS 2356-65 ft, 194 bbls, 2399 ft.

Texas Co.'s A. Wheeler 4, sw sw sw 18-6s-7e, TS 2430-52 ft, 279 bbls, 2452 ft.

Jefferson County: Blalock-Walters et al's Douthet 1, ne sw ne 16-1s-2e, Ben 1940-46 ft, 26 bbls, 1946 ft.

Gulf's Ella Stahler 1, nw ne 23-1s-4e, McCl 2905-10 ft, L O'H 2811-16 ft, 67 bbls, 3009 ft.

Shelby County: Myer & Duff's J. Keys 1, nw nw ne 32-11n-5w, abnd 652 ft.

Wabash County: Texas Co.'s W. Geiger 6, se sw se 8-1s-12w, Weiler 2002-12 ft, 68 bbls, 2014 ft.

Texas Co.'s W. Geiger 7, nw sw se 8-1s-12w, Cyp 2007-24 ft, 56 bbls, 2025 ft.

Superior's E. A. Viehman 7, sw sw nw 9-1s-12w, Ben 2158-85 ft, 60 bbls, 2185 ft.

O'Meara Brothers' J. C. Utter 3-A, se nw ne 17-1s-12w, Cyp 2010-21 ft, 30 bbls, 2021 ft.

Continental's C. E. Schauf 1 (DD), ne ne sw 30-2s-13w, otd 2484 ft, abnd 2900 ft.

Bennett Bros. et al's Hinterliter et al 2, se nw 11-1n-14w, abnd 2882 ft.

Wayne County: Mabee Oil & Gas' C. Wolff 1, ne ne 23-2s-6e, abnd 3317 f.t

Carter & Pure's G. H. Puckett 1, sw se 7-3s-8e, abnd 3463 ft.

J. P. Washburn et al's L. C. Jordan 2, se ne nw 34-2n-7e, McCl 3069-73 ft, 140 bbls, 3107 ft.

White County: First Nat'l Pet. Trust's G. V.

Wells Completed in United States in Week Ended November 20, 1943

Data preliminary and subject to revision. Revised and more complete data on all completions shown in monthly summary of drilling, published in second issue of each month. More detailed data on wildcats published in third issue of each month.

State or District	FIELD COMPLETIONS: New Wells *Oil	Gas	†Input	Dry	Total	Old Wells Deepened	WILDCAT COMPLETIONS *Oil	Gas	Dry	Total	ALL COMPLETIONS: This Week	Last Week	Cumulative: This Year	Last Year
Alabama	....	....	....	....	....	....	....	....	....	....	....	....	2	3
Arizona	....	....	....	....	....	....	....	....	....	....	....	....	5	2
Arkansas	7	....	....	1	8	....	....	....	....	....	8	6	198	209
California	35	1	....	....	36	....	....	....	3	3	39	26	1,428	693
Colorado	....	....	....	....	....	....	....	....	....	....	....	....	24	14
Florida	....	....	....	....	....	....	....	....	....	....	....	....	1	1
Georgia	....	....	....	....	....	....	....	....	....	....	....	....	1	2
Illinois	18	....	1	8	27	....	1	....	3	4	31	90	1,643	1,960
Indiana	3	1	....	....	4	....	....	....	2	2	6	8	250	344
Kansas	15	....	1	8	24	....	1	....	9	10	34	30	1,549	1,463
Kentucky	7	....	....	5	12	....	....	....	2	2	14	16	377	154
Louisiana	6	....	....	3	9	....	1	....	....	1	10	13	513	849
North Louisiana	1	....	....	....	1	....	....	....	....	....	1	4	197	....
South Louisiana	5	....	....	3	8	....	1	....	....	1	9	9	316	....
Michigan	5	2	....	1	8	....	....	....	3	3	11	8	532	620
Mississippi	....	....	....	....	....	....	....	....	....	....	....	....	35	96
Missouri	....	....	....	....	....	....	....	....	....	....	....	....	22	33
Montana	....	....	....	....	....	....	....	....	....	....	....	11	208	181
Nebraska	....	....	....	....	....	....	....	....	....	....	....	....	....	28
New Mexico	3	....	....	1	4	....	....	....	....	....	4	4	239	351
New York	18	....	8	....	26	....	....	....	....	....	26	27	1,072	1,107
Ohio	1	....	....	1	2	....	....	....	....	....	2	10	701	1,009
Oklahoma	17	1	....	2	20	1	1	....	8	9	30	34	1,295	1,272
Pennsylvania	32	....	18	....	50	....	....	....	....	....	50	50	2,420	3,528
Tennessee	....	....	....	....	....	....	....	....	....	....	....	....	6	8
Texas	54	1	1	21	77	3	1	1	18	20	100	95	3,807	4,844
E.Tex.Bor. Co.'s	....	....	....	....	....	....	....	....	2	2	2	....	18	....
E. Texas Field	....	....	....	....	....	....	....	....	....	....	....	....	5	....
Rest of E. Texas	4	....	....	2	6	....	....	....	....	....	6	7	218	....
North Texas	12	....	1	5	18	....	1	....	8	9	27	18	944	....
W. Central Tex.	3	1	....	2	6	2	....	1	2	3	11	7	346	....
West Texas	16	....	....	4	20	....	....	....	3	3	23	31	856	....
Tex. Panhandle	4	....	....	1	5	....	....	....	....	....	5	2	176	....
G. Coast, Upper	2	....	....	2	4	1	....	....	2	2	7	11	294	....
G. Coast, Lower	7	....	....	3	10	....	....	....	....	....	10	13	566	....
Southwest Texas	6	....	....	2	8	....	....	....	1	1	9	4	330	....
S. Central Tex.	....	....	....	....	....	....	....	....	....	....	....	2	54	....
West Virginia	....	10	....	3	13	....	....	....	....	....	13	20	615	677
Wyoming	....	....	....	....	....	....	....	....	....	....	....	8	111	88
Total U.S.	221	16	29	54	320	4	5	1	48	54	378	456	17,054	19,536

* Includes distillate wells. † Includes salt water disposal wells.

Charles 1, se nw se 20-3s-14w, Penn 1768-78 ft, 35 bbls, 2486 ft.

B. B. & M. Drlg. Co.'s C. A. Johnson 1, ne sw nw 13-6s-10e, AV 2841-59 ft, 58 bbls, 2864 ft.

ILLINOIS WILDCATS

Clay County — Failure: Texas Co.'s Fred Weiler 1, ne ne sw 27-3n-7e, abnd 3132 ft.

Coles County—Failure: C. W. Davey et al's M. & G. Scott 1, se se sw 31-12n-8e, abnd 2200 ft.

Jefferson County — Discovery: Nash Redwine's H. M. Casey 1, ne sw ne 6-3s-3e, McCl 2801-08 ft, 280 bbls, 2810 ft.

Marion County—Failure: Big Four Oil & Gas Co.'s Schaffnit 1 (DD) nw nw nw 9-2n-1e, abnd 3088 ft.

INDIANA

Daviess County: R. D. Brown's John C. Walden 1, c se sw 15-2n-6w, Cyp 760-71 ft, 682,000,000 gas 771 ft.

Gibson County: Superior's E. Thompson Unit 2, ne sw ne 25-2s-12w, Cyp 1966-78 ft, 69 bbls, 2170 ft.

L. J. Lloyd's D. Lane 1, c ne sw 23-1n-10w, McCl 1698-1703 ft, 4 bbls, 2001 ft.

J. F. Bauer's S. C. West et al 1, ne ne se 27-1n-10w, McCl 1766-70 ft, 165 bbls, 1772 ft.

INDIANA WILDCATS

Lake County—Failure: Peter Fox & Son's M. A. Carsten 1, se ne ne 5-32n-9w, abnd 2438 ft.

Posey County—Failure: Cherry & Kidd's Bessie Geiger 2, nw nw ne 6-7s-14w, abnd 3009 ft.

KANSAS

Barton County—Kraft-Prusa: Harry Gore's Oeser 3, se sw nw 17-16s-11w, Arbuckle 3298 ft, 2000 gals acid, fill 2000 ft oil 10 hrs, 3304 ft.

Barton County—Beaver: Bay Pet.'s Stoskoph 1, s½ ne ne 21-16s-12w, Arbuckle 3393 ft, no shows, abnd 3433 ft.

Barton County—Ainsworth: Black-Marshall Oil's Ainsworth 5, nw ne nw 33-16s-13w, Arbuckle 3442 ft, no shows, abnd 3580 ft.

Barton County—W. Ainsworth: Black-Marshall's Ainsworth 6, nw sw sw 33-16s-13w, Arbuckle 3375 ft, 1000 gals acid, fill 1500 ft oil 12 hrs, pump 330 bbls 3388 ft.

Butler County—Potwin: Maxwell Pet's McGill 11, se sw ne 31-24s-4e, Miss 2666 ft, 4000 gals acid, pump 7 bbls per hr, 2720 ft.

Butler County—Brenton: Nat'l Assoc Pet.'s Equitable Life 1, ne ne se 16-26s-3e, Viola 3125 ft, hfw, abnd 3137 ft.

Butler County—Brandt-Sensenbaugh: Adair-Morton's Cannon 6, c n½ nw 15-28s-7e, Miss 2726 ft, 3000 gals acid, pump 100 bbls, 2740 ft.

Adair Morton's Ramp 5, sw se nw 23-28s-7e, Miss 2723 ft, no shows, abnd 2730 ft.

Ellis County—Ellis: Darby Pet.'s Bittel "B" 3, w½ nw ne 6-13s-20w, Arbuckle 3826 ft, pump 247 bbls, 3847 ft.

Graham County—Morel, SE Pool: Gulf's Hinman 1, nw se se 23-9s-21w, Arbuckle 3753 ft, pump 275 bbls oil, 3758 ft.

Graham County—Un-named: Continental's Muilenburg 1, nw ne ne 26-9s-21w, Arbuckle 3814 ft, fill 2600 ft wtr, abnd 3832 ft.

Greenwood County — Virgil: Jackman & Jackman's Burris 2, se nw nw 16-23s-13e, Miss 1776 ft, 2000 gals acid, pump 12½ bbls oil 7 hrs, 1810 ft.

Marion County—Lost Springs: Derby & Carrey's Riffel 3, sw ne sw 10-17s-4e, Arbuckle 2994 ft, input test 125 bbls wtr, salt wtr disposal well, 3189 ft.

McPherson County—Henne: Phil-Han and Adair-Morton's Jacobson 2, s½ se ne 17-17s-1w, Miss 2624 ft, 1000 gals acid, pump 12½ bbls oil 2 hours, 2634 ft.

McPherson County—Ritz-Canton: J. H. Hershey's Dreher 1, s½ se ne 19-19s-1w, Miss 2929 ft, swab 50% oil, 50% wtr, td 3458 ft, pb 3035 ft.

Pratt County—Carmi: Skelly's Honeman 2, c nw sw 31-26s-12w, Arbuckle 4306 ft, flow 30 bbls oil 2 hrs, 4321 ft.

Rice County—Volkland: Phillips' Vol 1, ne nw se 27-18s-9w, Arbuckle 3268 ft, abnd 3279 ft.

Rice County—Welch Area: C. L. Carlock's Walsten 1, ne ne ne 11-21s-6w, Miss 3360 ft, pump 25 bbls oil, 15 bbls wtr, 3381 ft.

Russell County—Trapp: Carter's Geo. Sellens 2, c nw sw 20-15s-13w, Lansing 2965 ft, pay 2990-3010 ft, 3000 gals acid 2977-81 ft, pump 990 bbls oil, 3240 ft.

Pryar & Lockhart's Flegler "B" 2, s½ se ne 10-15s-14w, Arbuckle 3303 ft, sw&sso 3314-22 ft, abnd 3325 ft.

Russell County — Un-named: Phillips and Continental's Pauline 3, c nw nw 15-15s-14w, Arbuckle 3255 ft, abnd 3269 ft.

Stafford County—Drach: Sinclair Prairie's Crawford 2, c nw ne 7-22s-12w, Arbuckle 3666 ft, 1000 gals acid, 3670 ft.

Stafford County—Farmington: Skelly's Campbell "B" 1, sw se nw 34-24s-15w, Arbuckle 4286 ft, 5200 gals acid, pump 238 bbls, 4423 ft.

Stafford County—Leesburgh: Continental et al's Maggie Russell 3, nw se ne 13-25s-13w, Arbuckle 4120 ft, 500 gals acid, pump 175 bbls, 4132 ft.

KANSAS WILDCATS

Barber County—Failure: Shell's Hull 1, sw sw se 12-30s-12w, Viola 4592 ft, Arb 4792 ft, abnd 4865 ft.

Cowley County—Failure: Nat'l Assoc. Pet.'s Billiter 1, w½ sw se 16-30s-5e, KC 2620 ft, Bart 2925 ft, Miss 2941 ft, sso 295-353 ft, Arb 3385 ft, abnd 3398 ft.

Dickinson County—Failure: N. Appleman & Nat'l Shockey 1, ne ne se 18-14s-1e, Lansing 1792 ft, KC 1822 ft, Miss 2443 ft, abnd 2485 ft.

Ellis County—Failure: Coralena's Foster 1, ne nw sw 1-15s-16w, dd 3464 ft, 2000 gals acid, pb sso 3346-50 ft, abnd 3481 ft.

Kingman County—Failure: Vickers' Ralls 1, sw sw nw 8-30s-8w, Kinderhook 4353 ft, Viola 4478 ft, Simp 4532 ft, Arb 4648 ft, abnd 4700 ft.

Osborne County—Failure: Paul J. McIntyre's Applegate 1, c sw sw 11-10s-12w, lime 3021-72 ft, KC 3228 ft, Miss 3534 ft, Sooy 3536 ft, Miss 3644 ft, Kinderhook 3728 ft, Viola 3791 ft, Simpson 3910 ft, Arb 3969 ft, abnd 4025 ft.

Pratt County—Failure: Shell's Stoops "A" 1, se se sw 7-29s-12w, Arb 4680 ft, abnd 4731 ft.

Rice County—Failure: Magnolia's Schoonover 1, sw nw sw 24-18s-9w, Lansing 2907 ft, Viola 3288 ft, Simp 3305 ft, Arb 3356 ft, abnd 3380 ft.

Rice County—Discovery: Phillips' Volk 1, ne ne sw 27-18s-9w, sso 3238-40 ft, 3258-64 ft, pb 3268 ft, 3261 ft, 3256 ft, pump 126 bbls 8 hrs, td 3275 ft.

Saline County—Failure: Flynn Oil & Brownwood Oil's Hesler 1, sw ne nw 5-16s-1w, KC 1975 ft, sso 2614-16 ft, base KC 2325 ft, Miss 2616 ft, abnd 2653 ft.

KENTUCKY

Butler County: Heath Oil Co.'s D. Blaine 2, 12-H-32, abnd 551 ft.

Mansfield's M. Hammer 2, 12-H-32, Jones 465-93 ft, 15 bbls, 493 ft.

Don Davis et al's Robt. McPhearson 1, 13-H-32, Jones 342-69 ft, 9 bbls, 375 ft.

Daviess County: Dale Goodsen's O'Flynn & Howard 1 (5) 18-N-29, Bar 1445-82 ft, 10 bbls, 1526 ft.

Emma Cobb's James Tinsley 8, 21-N-30, abnd 943 ft.

Henderson County: Cherry & Kidd's Burbank 12, 3-P-21, Cyp 2306-11 ft, 250 bbls, 2311 ft.

McLean County: Vickers & Slaughter's Roy Cox 1, 18-M-29, abnd 1425 ft.

Ohio County: Ellis & Masey's C. O. Martin 2, 3-M-31, abnd 776 ft.

Union County: Carter's M. Drury 1, 1-O-20, abnd 2583 ft.

Carter's K. Austin 1, 10-O-20, McCl 2559-67 ft, 282 bbls, 2576 ft.

Sohio's Hancock 3, 10-O-20, O'H 2494-98 ft, McCl 2528-33 ft, 1181 bbls, 2542 ft.

Sun's Tapp 5, 10-O-20, O'H 2542-45 ft, McCl 2583-87 ft, 73 bbls, 2650 ft.

KENTUCKY WILDCATS

Henderson County—Failure: Carter's George Reed 1, 5-O-24, abnd 2621 ft.

McLean County—Failure: Sohio and Basin Drlg. Co.'s Gell-Gaton 1, 13-M-26, abnd 3370 ft.

NORTH LOUISIANA

Claiborne Parish — Haynesville: Midstates Oil Co.'s Youree-Mayfield 1, 25-23n-8w, flow 648 bbls 40.6-gr, ½-in, perf 5508-18, 5558-66 ft, td 5597 ft.

The OIL WEEKLY'S TRADING POST

USED EQUIPMENT FORUM

CLASSIFIED ADS . . . EQUIPMENT . . . SERVICES . . . PERSONNEL

FOR SALE

■ FOR SALE: 3975' of 5-9/16" regular API drill pipe. 1300' Hughes FH drill pipe. 1-3 speed Union Tool Drawworks. General Oil Tool Company, Burrton, Kansas.

■ FOR SALE: 5 used Allis-Chalmers Model B-15 Power Units complete with weather proof housing and combination gas and gasoline carburetors. J. W. Ellis, 602 San Angelo National Bank Bldg., San Angelo, Texas.

■ FOR SALE: 1—44 Super Star drilling machine, in good working condition; powered with 15-30 McCormick-Deering tractor, collapsible steel mast, 2 sheave crown. Write or call, Phil Wilbur, Pace Bldg., Duncan, Okla.

■ FOR SALE: 19—6-inch 250-lb. SE Powell NRS gate valves, 3—8-inch ditto, 2—8-inch std ditto, 6—3-inch fig. 190 Irenew globe valves, 18—3-inch 11½-thd Wal std IBBM gate valves, 12—1½-inch fig. 1190 Irenew globe valves, 7—1¼-inch Powell Star 200 WP brass gate valves, 2—4-inch Crane 1117 and 1116 steam pressure relief valves. All materials above new. One used Manistee Rotrubu pump 1240 GPM against 230 ft. head. All materials listed below reconditioned and tested: 22—8-inch 175-lb. Crane flanged OS&Y gate valves, one 10-inch ditto, 3—8-inch flanged 250-lb. NRS ditto, 4—4-inch ditto, 3—6-inch Wescott 1600 WP SE NRS ditto, 3—6-inch 1200 WP ditto, 36—4-inch std SE ditto, 8—4-inch std OS&Y ditto, 1—6-inch flanged 800-lb. WP Crane OS&Y ditto, 6—10-inch std NRS SE ditto. Large stock new and reconditioned fittings sizes 4-inch to 12-inch, flanged or screwed. Write or wire for complete list of materials. No priority rating required. Allied Supply & Mfg. Co., Odessa, Texas. Phone 299; Houston, Texas, Phone Woodcrest 69960.

SITUATIONS WANTED

■ SITUATION WANTED: Married man, age 42, with entire life spent in drilling, producing, refining, and marketing branches of industry, desires change. Want opportunity where ability and initiative and hard work will reward. Routine desk work not wanted. Employed by present firm ten years. Consider part salary and part interest deal. It will not cost you anything for interview. Replies confidential. Box 108, c/o The Oil Weekly, Houston 1, Texas.

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ADVERTISING RATES

TRADING POST SECTION

Regular classified advertisements for this special section, set in type this size without border, take flat rate of 7 cents per word for the first insertion and 5 cents per word for each subsequent insertion of same copy. Display advertisements for this section, set in suitably larger type with ruled border, are $5.00 per inch for first insertion and $4.00 per inch for subsequent insertions. Remittance must accompany copy which should be sent to:

Trading Post Section, THE OIL WEEKLY
P. O. Box 2608 Houston 1, Texas

OKLAHOMA

Caddo County—W. Cement: Magnolia's Ida Edwards 2, sw nw nw 1-5n-10w, Medrano 5765 ft, flow 1257 bbls 18 hrs, ½-in, 5917 ft.

Caddo County—Un-named: C. C. Pepper's Ginrich 1, c ne nw 6-5n-9w, Deese and Hoxbar prod. Melton 5815 ft, sand 6268-6340 ft, 6600-50 ft, 4,500,000 gas, 7310 ft.

Creek County—E. Tuskegee: Bruin Oil's Cruce 2, ne nw se 28-14n-10e, Wilcox 3312 ft, pump 35 bbls, td 3354 ft, pb 3320 ft.

Creek County—Glenn: Gulf's Clayton 33, nw ne se 8-17n-12e, Glenn 1569-1736 ft, shot 360 qts, pump 19½ bbls oil, 21 bbls wtr, 1740 ft.

Garfield County—Garber: Sinclair Prairie's Hoy 26, se se ne 25-22n-4w, sand 1130-40 ft, pump 15 bbls, 1159 ft.

Garvin County — Pauls Valley: Sinclair's Patchell 1, sw sw nw 30-4n-1e, Penn prod, flow 388.8 bbls, ¾-in, 306,000 gas, 4174 ft.

Ohio, Continental and Texas Co.'s Huckaby Unit "A" 2, nw nw se 25-4n-1w, Bromide 4003 ft, flow 2332 bbls, 2,251,000 gas, ¾-in, 4046 ft.

Garvin County—Un-named: Pure and Continental's Bedal-Collins 1, nw nw sw 25-4n-1w, Penn sand prod, top sand 3985 ft, perf 3950-4012 ft, flow 210 bbls oil, 321,000 gas, Bromide prod, Bromide sand 4041 ft, flow 2667 bbls oil, 2,451,000 gas, td 4070 ft.

Kay County—Vernon: F. Morgan's School Land 2, sw ne sw 16-29n-1e, Miss chat 3418 ft, abnd 3488 ft.

Kay County — Un-named: D. Morgan's Schnee 2, se se ne 20-29n-1e, Miss 3365 ft, pump 71 bbls, 3435 ft.

Logan County — Crescent: Sunray's Wells "B" 2, sw sw sw 23-17n-4w, Layton 4992 ft, flow 198 bbls, 5012 ft.

Marshall County—Aylesworth: Magnolia's Ward-Rains 1, ne sw se 13-6s-6e, 2nd Bromide 3045 ft, shot 80 qts, 5½-in 3245 ft, 3000 gals acid, pump 138 bbls, 3255 ft.

Marshall County—Isom Springs: Snell's Fee 4, se nw sw 31-7s-6e, sand 471-83 ft, pump 7 bbls oil, 50 bbls wtr, 483 ft.

Okfuskee County—Bearden: Peppers Refg.'s Price 1A, ne sw sw 16-10n-9e, Hunton 3750 ft, 2000 gals acid, 20 bbls distillate, 3,400,000 gas, td 4005 ft, pb 3940 ft.

Okfuskee County—Sheldon: George D. Blaylock's Wilson 5, nw se ne 21-12n-11e, Booch 2205 ft, shot 20 qts, pump 25 bbls oil 5 bbls wtr, 2204 ft.

Osage County—Hickory Creek: Ross O & G's #16, ne nw sw 14-29n-11e, sand 988-1048 ft, shot 50 qts, pump 9 bbls oil 18 bbls wtr, 1127 ft.

Pottawatomie County — Brooksville: Cities Service's Cade 3A, nw nw nw 3-8n-3e, Hunton pay 4730-60 ft, 500 gals acid, pump 152 bbls, 5387 ft, pb 4760 ft.

Stephens County — Velma: Burkhart & Spears' Hallmark 1, se se ne 15-1s-5w, sand 685-700 ft, pump 3 bbls, 700 ft.

Burkhart & Spears' Hallmark 1A, sw sw ne 15-1s-5w, sand 195-205 ft, abnd 205 ft.

Stephens County—W. Loco: J. M. Jackson's Lowery 1, sw nw se 6-3s-5w, lime 998-1228 ft, 3000 gals acid, pump 35 bbls oil, 3 bbls wtr, 1250 ft.

OKLAHOMA WELL DEEPENED

Okfuskee County—Morris: Link's N. Doyle 16, ne nw nw 28-13n-14e, Wilcox 2496 ft, hfw, otd 1800 ft, abnd 2526 ft.

OKLAHOMA WILDCATS

Garfield County—Failure: Ingling & Parker's King 1, ne se sw 12-21n-3w, Lay 4259 ft, abnd 4279 ft.

Grady County—Failure: Jordan Pet. Co.'s Pursley 1, se sw sw 17-4n-6w, Penn 6988 ft, jnkd hole, abnd 6988 ft.

Kay County—Failure: Prunty Prod's Buessing 1, ne ne sw 28-27n-1e, Wilcox 3810 ft, sso, pb 3653 ft to Bart, perf 21 holes 3600-3605 ft, perf 11 holes 3285-90 ft, in Oswego, abnd 4016 ft.

Lincoln County—Failure: Mid-Continent et al's McKeown 1, ne ne sw 9-16n-5e, Woodford 4245 ft, Syl 4275 ft, Viola 4335 ft, Wilcox 4427 ft, abnd 4432 ft.

Noble County—Failure: Northern Ordnance's McCoy 1, se nw sw 24-23n-2w, pb 3612 ft, 3300 ft wtr, abnd 4892 ft.

Okmulgee County — Discovery: Nat'l Pet. Co.'s Lewis 5, se sw nw 33-16n-11e, sg 2015 ft, so 2075 ft, Wilcox 2986 ft, shot 10 qts 2989-96 ft, small inc in gas, pump 30 bbls oil, 2996 ft.

Pawnee County — Failure: McMillan Pet. Co.'s Aetna Life 1, sw se 10-22n-4e, Hog 2008 ft, Lay 2108 ft, Cob 2373 ft, Cleve 2388 ft, Prue Zone 2973 ft, Oswego 3028 ft, Verd 3290 ft, Pink 3360 ft, Inola 3400 ft, Bart 3425 ft, abnd 3473 ft.

Payne County — Failure: Wood Oil Co.'s Carter Tank Farm 1, nw nw se 12-18n-5e, brkn lime 3337 ft, Miss 3450 ft, abnd 3463 ft.

Stephens County—Failure: Hall Briscoe's Edwards 1-A, sw se ne 4-3s-6w, top sd 1830 ft, Viola 2234 ft, abnd 2304 ft.

SOUTH LOUISIANA

LaFourche Parish — Bayou des Allemands: Amerada's Greens 10, 10,728 ft s 8101 ft w of ne cor sec 13, 56-15s-20e, abnd 10,701 ft.

Plaquemines Parish — Grand Bay: Gulf's State-Grand Bay 19, go 3267 ft e alg nl sec 8 fr nw cor 1845 ft s at ra, 8-20s-19e, 5½-in 6860 ft, perf 6767-6772 ft, flow 299 bbls, 5/32-in, td 9083 ft.

Plaquemines Parish—Venice: Tide Water's Buras Levee 23, 1140 ft fr s 2330 ft fr el sec 23-21s-30e, 7-in 10,105 ft, perf 8675-8712 ft, flow 263 bbls, ½-in, td 10,105 ft.

St. Martin Parish—Lake Chicot: Amerada-

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YOUR WAR BONDS ARE HELPING HASTEN VICTORY

Phillips' Curzweg 3, 3700 ft e 1320 ft s of nw cor 31-11s-10e, abnd 11,500 ft.

Terrebonne Parish—Deer Island: Humble's Continental Land 4, start se cor sec 13, fo 1168 ft n'ly alg el sec 13, th w'ly at ra 2099 ft, 13-18s-12e, 7-in 10,150 ft, perf 10,023-26 ft, flow 3.36 bbls per hr, 3/16-in, td 11,468 ft.

Vermilion Parish—White Lake: Union Oil of California's Vermilion Parish School Board 7-A, 5½-in 6447 ft, dual completion, perf 5970-6004 ft, flow 154 bbls, 9/64-in, perf 6435-42 ft, flow 192 bbls, 9/64-in, td 6447 ft.

Iberville Parish—St. Gabriel: George Echols & J. Ray McDermott's Iberville Mortgage & Loan 1-A, s 89° 30 mins w 3124 ft and s 1° 00 mins e 660 ft fr ne cor 13-9s-1e, abnd 10,057 ft.

SOUTH LOUISIANA EXTENSION

Terrebonne Parish—Gibson area: Falcon Seaboard & William Helis' Jackson 1, 2574 ft n 00° 53 mins w and 360 ft s 89° 07 mins w fr se cor 25-17s-15e, 5½-in 9561 ft, perf 9280-90 ft, flow 225 bbls, 9/64-in, td 10,600 ft. Extends prodn 1 mi e of ne Gibson prodn.

SOUTH LOUISIANA WILDCAT

Iberville Parish—Discovery: Sugarfield Oil Co.'s Iberville Mortgage & Loan 1, Rosedale area, 800 ft fr nw and 1600 ft fr nel sec 74-7s-10e, 5½-in 10,400 ft, perf 10,009-12 ft, flow 215 bbls, 7/64-in, td 10,500 ft. Opens field.

MICHIGAN

Arenac County — Moffatt: C. W. Teater's Szafarn 1, n½ se ne 30-20n-3e, dry, 1675 ft.

Cass County—Edwardsburg: Thomas Dev. Co.'s Huffman 1, se ne ne, 22-8s-15w, pump 5 bbls, 669 ft.

Clare County—North Hamilton: Sun's Huber 2, w½ se nw, 6-19n-3w, Dundee 3965 ft, pump 16 bbls, 4065 ft.

Mecosta County—East Fork: L. T. Barber's State 2, nw se se 2-16n-7w, Stray sand, 1,300,000 gas, 1494 ft.

Osceola County—Evart: Sun's Lauman 2, s½ se se 21-18n-8w, Dundee lime, pump and flow 43 bbls, 3829 ft.

Dow Chemical Co.'s Fent-Worth 15, c ne 26-18n-8w, Stray sand, 160,000 ft gas, 1365 ft.

Van Buren County—North Bangor: Fisher-McCall's Wallace 3, nw ne sw 9-2s-16w, Traverse lime, pump and flow 99 bbls, 1018 ft.

Van Buren County—Bloomingdale: Homrich & Kendall's Pierce 1, sw sw ne 10-1s-14w, Traverse lime, pump 18 bbls, 1294 ft.

MICHIGAN WILDCATS

Clinton County — Failure: C. W. Teater's Holbrook 1, n½ nw se 36-8n-2w, Dundee 2801 ft, td 2860 ft.

Kent County—Failure: Columbia Gas & Oil Co.'s Budenger 1, sw sw ne 19-5n-12w, Traverse 1747 ft, td 1804 ft.

Osceola County—Failure: Gordon Oil Co.'s Wood 1, s½ sw se 21-20n-9w, Dundee 3942 ft, td 3960 ft.

NEW MEXICO

Eddy County: Brewer Drlg. Co.'s Kindle 2, ne ne ne 26-18s-26e, flow 8 bbls, 2-in, shot 70 qts 9d2-1012 ft, td 1047 ft.

Skelly's Dow 6-B, c se nw 21-17s-31e, flow 105 bbls, 2-in, shot 70 qts 3265-95 ft, 96 qts 3521-85 ft.

D. D. Thomas et al's Johnson 1, 1990 ft out swc 28-16s-31e, mile e of Square Lake, abnd 4303 ft.

Lea County—Eunice: Repollo Oil Co.'s State 1-G-157, c se ne 5-22s-36e, salt 1585-2609 ft, flow 15 bbls, 2-in, 7000 gals acid 3840-95 ft.

WEST CENTRAL TEXAS

Brown County: Central Texas Gas Co.'s Hester 1, 447 ft snl and 660 ft wel lot 1, Wm. K. Dalton sur 57, Marble Falls 1750 ft, 4,600,000 gas, acid 4000 gals 1766-86 ft.

Janellen Oil Co.'s Boenicke 1, 672 ft e and 1750 ft s of swc Waller CSL sur 1, in W. M. Badgett sur, 5,000,000 gas, 1148-65 ft.

O. B. Perot et al's Coffee 1, 500 ft nsl and 250 ft wel Simeon Sanders sur 788, abnd 1180 ft.

Eastland County: J. F. Baker et al's Mulloy 4, 400 ft nsl and 3220 ft wel of W. Ahrenbeck sur 1, abnd 3170 ft.

Jones County—Strand: J. C. Hunter et al's Strand 3-A, 510 ft nsl and 1820 ft ewl ne H&TC 5, blk 5, Palo Pinto 3409 ft, elev 1521 ft, flow 312 bbls, ⅛-in, 3410-13 ft.

Shackelford County: C. J. Kleiner et al's Morris 2, 2970 ft ewl and 1320 ft snl ET 166, elev 1781 ft, pump 31 bbls, 1581-92 ft.

Roeser-Pendleton and Conoco's Cook 11-A-118, 345 ft nsl and 340 ft wel ne¼ ET 118, pump 60 bbls, 1650-57 ft.

WEST CENTRAL TEXAS WELLS DEEPENED

Fisher County—McCaulley: F. A. Stevenson et al's Bridges 1, c nw ne HT&B 51, blk 1, elev 1923 ft, otd 3283 ft, pump 10 bbls oil, 2 water, acid 2000 gals 2965-85 ft, td 3309 ft, pb 2997 ft.

Jones County—Wimberly: W. D. Brookover et al's Church 2, blk 88, leag 126, DeWitt CSL, dual completion, otd 2390 ft, flow 1376 bbls ¾-in, acid lower pay 2000 gals 2390-2530 ft, td 2560 ft.

WEST CENTRAL TEXAS WILDCAT

Jones County—Failure: R. H. Roark et al's White 1, se se sw sec 26, Deaf & Dumb Asylum Lands, elev 1575 ft, abnd 3010 ft.

Palo Pinto County—Gas Discovery: Palo Pinto O&G Corp.'s J. F. Teichman 1, nw se sw T&P 52, blk 2, 824,000 ft gas, sand 3947-49 ft.

Shackelford County—Failure: C. A. Montgomery et al's Norton 1, 1600 ft from nw and 480 ft from sw lines TE&L 567, abnd 545 ft.

WEST TEXAS

Andrews County—Embar: Phillips' University-Andrews 44, 1991 ft snl 678 ft wel sec 30, blk 10, elev 3247 ft, dual completion, flow 133 bbls 41.7-gr 19 hrs, ½-in, acid 7500 gals Clear Fork perf 6200-42 ft; flow 1772 bbls 45.7-gr 24 hrs, ½-in, acid 1000 gals Ellenburger perf 7960-90 ft, td 8014 ft.

Andrews County—Mascho: N. G. Penrose's University-Cities Service 4, 678 ft ewl 614 ft nsl ne sec 3, blk 10, flow 243 bbls, 1-in, shot 490 qts 4340-4586 ft, td 4592 ft.

Phillips' University 2-D, 614 ft nsl 2033 ft wel sw¼ sec 4, blk 10, flow 112 bbls, ¼-in, 2000 gals acid 4260-4616 ft.

Cochran County — Slaughter: Devonian et al's Duggan 9-C, 510 ft out swc lab 7, lge 54, Oldham CSL, flow 935 bbls, 2½-in, 12,000 gals acid 5035-79 ft.

Honolulu-Saltmount Oil Co.'s Blake 3-A, 580 ft out sec, lab 14, lge 54, Oldham CSL, flow 595 bbls, 2-in, 10,000 gals acid 5060-85 ft.

Crane County — Dune: Kenwood Oil Co.'s University-Tidal 1, sw ne ne sec 21, blk 30, pump 79 bbls, lime 3184-3201 ft.

Ector County—Foster: Richmond Drlg. Co.'s Maurice 2, 1785 ft ewl 1650 ft nsl T&P 32, blk 42, T-2-S, pump 170 bbls, shot 300 qts 4445-4540 ft.

Ector County — Goldsmith: Stanolind's C. Scharbauer-Landreth 4-K, 330 ft ewl 1650 ft snl T&P 34, blk 44, T-1-N, pump 61 bbls oil, 39% wtr, 4000 gals acid 4182-4208 ft.

Ector County—Penwell-Judkins: J. E. Simon et al's University 1, sw sw sw sec 10, blk 35, abnd 3609 ft.

Ector County—North Cowden: Stanolind's Midland Farms 9-D, 556 ft nsl 904 ft ewl T&P 44, blk 42, T-1-N, flow 296 bbls oil, 5 bbls wtr, shot 500 qts 4645-4845 ft, td 4860 ft.

Hockley County—Slaughter: Stanolind's Slaughter 2, 670 ft nsl 564 ft ewl lab 55, lge 40, Maverick CSL, flow 646 bbls, 10,000 gals acid 4880-4997 ft.

T. P. Coal & Oil Co.'s Rains 7, 580 ft out swc lab 4, lge 42, Rains CSL, flow 615 bbls, 2-in, 10,000 gals acid, 4884-4912 ft.

Mitchell County—Westbrook: Col-Tex Ref. Co.'s Adams 1, 331 ft snl 1688 ft wel T&P 11, blk 28, T-1-N, pump 89 bbls oil, 2 bbls wtr, shot 1260 qts 2950-3185 ft.

Pecos County—Apco: Standard of Texas' Fromme 2, 1980 ft fr nw and swl H&GN 106, blk 10, elev 2453 ft, Ellenburger 4350 ft, schist 4550 ft, abnd in granite 4654 ft.

Pecos County—Tobarg: Phil Broun et al's Tippett-Humble 23, 750 ft ewl 1350 ft snl GC&SF 40, blk 194, pump 16 bbls, shot 50 qts 495-550 ft, td 562 ft.

Cardinal Oil Co.'s Tippett-Shell 6-F, 150 ft fr m/e/w 3948 ft fr m/n/n lines GC&SF 61, blk 194, pump 9 bbls, shot 20 qts 360-70 ft, td 397 ft.

Pecos County—Yates: Mack Hays et al's Smith 1, c nw sw T.C. Ry. 11, blk 194, flow 22 bbls 30.6-gr, 2-in, shot 55 qts 1751-88 ft, td 1792 ft.

Reagan County — Big Lake: Big Lake Oil Co.'s University 22-C, 392 ft nsl 2032 ft wel sec 24, blk 9, elev 2674 ft, Ellenburger 8410 ft, abnd 8714 ft.

Scurry County—Sharon: R. J. Byrd et al's Sterling 2, sw nw sw H&TC 140, blk 97, pump 109 bbls, shot 600 qts 2370-2500 ft.

Yoakum County—Wasson: Drilling & Exploration's Bowen-Humble 1-A, 2050 ft snl 590 ft ewl sec 729, elev 3689 ft, abnd 5224 ft.

WEST TEXAS WILDCATS

Ector County—Failure: Forest Development Corp.'s Edwards 1-D, c nw nw T&P 33, blk 43, T-3-S, elev 3000 ft, anhydrite 1790 ft, Yates 3050 ft, frosted grains 3080 ft, Grayburg 4285 ft, abnd 4630 ft.

Gaines County — Failure: Honolulu's Homann 1, c se se W.T. Ry. 96, blk G, elev 3250 ft, anhydrite 2230 ft, Yates 3320 ft, frosted grains 3370 ft, brown lime 4390 ft, San Andres 5030 ft, abnd in sul wtr 5452-57 ft.

Hockley County—Failure: Globe O&R Co.'s Ellwood 1, 580 ft out nec lab 8, lge 6, Wilbarger CSL, elev 3357 ft, anhydrite 2015 ft, brown lime 3520 ft, San Andres 3810 ft, abnd 6305 ft.

EAST TEXAS

Houston County—Percilla: Russell & Harlan Grimes' Jones 1, 990 ft ewl 1850 ft nsl, Jose M. Procella sur, elev 409 ft, Woodbine 43 ft low, abnd 6000 ft.

Wood County—Hawkins: Humble's Price 2, 1500 ft nsl 2000 ft wel, Geo. Brewer sur, elev 378 ft, Woodbine perf 4691-4784 ft, pump 237 bbls, td 4829 ft.

Humble's Price 3, 1450 ft nsl 467 ft wel, Geo. Brewer sur, Woodbine 4433 ft, ¼-in, perf 4645-4800 ft, flow 124 bbls 27.5-gr, 4805 ft.

Wood County—Manziel: P. G. Lake's Pollard-Magnolia 1, 600 ft nsl 520 ft ewl 42.7-ac lse, W. H. Secrest sur, elev 478 ft, Georgetown 5185, Fort Worth lime 5895-5955 ft, abnd 6440 ft.

Wood County—Quitman: Chas. L. McMahon's Taylor 3, 2138 ft nsl 4170 ft ewl, H. Anderson sur, Paluxy 6260 ft, oil sand 6261 ft, wtr sd 6336 ft, perf 6297-6308 ft, flow 376 bbls, ¼-in, 6349 ft.

Shell's Goldsmith 7, 773 ft ewl 3900 ft nsl, E. Goodair sur, elev 417 ft, Paluxy 6190 ft, perf 6204-6310 ft, flow 292 bbls, ¼-in, 6387 ft.

EAST TEXAS BORDER WILDCATS

Marion County—Failure: Gulf's J. D. Lyttleton 1, Rufty sur, 12 m nw of Jefferson, Pettit and Travis Peak, abnd 7680 ft.

Harris County—Failure: Siosi Co.'s T. C. Lindsey 1, Daniel Rouse sur, 6 m nw Waskom field, Pettit and Travis peak, abnd 6500 ft.

NORTH TEXAS

Archer County — Little Wichita: Phillips' Wilson-Churchman 1, 660 ft out nec lot 1, sec 117, ATNCL, Bend 4885 ft, flow 374 bbls, ¾-in, 500 gals acid, perf 4886-4905 ft, 4962 ft.

Archer County: Albert Crenshaw et al's Carter 1, 927 ft snl 1064 ft wel sec 21, blk 5, Clark-Plumb sur, abnd 1154 ft.

Henry Grace Prod. Co.'s Henry 4, 700 ft snl 790 ft ewl sec 35, blk 5, Clark-Plumb sur, pump 50 bbls, sand 904-06, 911-20 ft.

Hedrick Oil Co.'s Carter 2, 1720 ft nsl 990 ft ewl sec 21, blk 5, Clark-Plumb sur, pump 25 bbls, sand 876-79 ft.

Rancho Oil Co.'s Prideaux 21, 545 ft snl 1000 ft wel blk 27, Fraley sur, abnd 714 ft.

J. S. Smith et al's Longley 9-B, 160 ft snl 540 ft wel se¼ TE&L Co. sec 1839, pump 5 bbls, 937-44 ft.

Baylor County—Seymour: Riher & Fain's Turbeville-Cowan 3, w½ T&NO sec 198, abnd 2570 ft.

Clay County: Perkins & Cullum's Taylor 5-C, 540 ft snl 370 ft ewl blk 43, Bacon sur, pump 75 bbls, sand 1099-1121 ft.

Cooke County: W. T. Lucas et al's Gregory 2, 330 ft out swc 126½-ac lse, Thos. Toby sur A-1062, abnd 1639 ft.

Texas Co.'s Trubenbach 32, pump 27 bbls, sand 734-71 ft, td 781 ft.

Haskell County—Lawson: Ed. C. Lawson et al's Rose-Amerada 1-B, 440 ft w 1479 ft n of m/s/se cor 140-ac tr, J. M. Cass sur, flow 341 bbls, 2-in, perf 2794-99, 2804-11 ft, td 3298 ft.

Jack County — Worsham - Steed: Joe A. Worsham's Sewell 2, 1693 ft ewl 467 ft nsl of 389½-ac tr, Daniel Crenshaw sur, abnd 4720 ft.

Wichita County: Magnolia's Schmoker 45, 980 ft snl 1059 ft wel blk 24, Red River Valley Lands, pump 9 bbls, sand 1753-73 ft.

Wichita County — K-M-A: Hanlon & Buchanan's Wichita Co. Water Dist. 2, 1272 ft wel 3000 ft snl blk 29, Cowherd subdiv, lime 3979 ft, pump 18 bbls oil, 5 bbls water, shot 180 qts 4100-38 ft, td 4141 ft.

Wilbarger County: W. T. Waggoner Est.'s Fee 2-MM, c nw ne H&TC 8, blk 17, Bend 4081 ft, Ellen 4575 ft, pump 120 bbls, 3000 gals acid, perf 4065-77 ft, td 4680 ft, pb 4495 ft.

W. T. Waggoner Est.'s Fee 3-MM, c nw nw H&TC 7, blk 17, KMA lime 3872 ft, Mississippi 4475 ft, Ellen 4505 ft, flow 1440 bbls, ½-in, 2000 gals acid 4515-27 ft.

W. T. Waggoner Est.'s Fee 2-PP, 1936 ft snl 374 ft wel H&TC 7, blk 17, Ellen 4348 ft, flow 720 bbls, ½-in, 2000 gals acid 4355-68 ft, td 4380 ft, pb 4376 ft.

NORTH TEXAS GAS INPUT WELL

Young County: W. F. Palmer et al's Marshall 12, 150 ft nsl 550 ft wel of n-95 ac of tract, sec 3401, TE&L Co. sur, sand 890-92 ft.

NORTH TEXAS WILDCATS

Archer County—Failures: Akin-Dimock et al's Skinner 2, 1300 ft wel 800 ft nsl blk 20, J. W. Harris subdvn, abnd 1484 ft.

J. L. McMahon et al's Elmore 1, 1000 ft snl 2000 ft ewl sec 29, blk 5, Clark-Plumb sur, abnd 1186 ft.

R. R. Robertson et al's Abercrombie 1, 1420 ft nsl 100 ft ewl, blk 152, J. W. Harris subdv, abnd 1240 ft.

White & Duncan's R. C. Kinder 1-A, 330 ft out nwc sec 50, blk 5, Clark-Plumb sur, abnd 1266 ft.

Cooke County—Failure: Bridwell Oil Co.'s Campbell 2, 2500 ft snl 600 ft wel, O. Leverett sur A-667, elev 914 ft, Ellen 1655 ft, abnd 1673 ft.

Haskell County — Failure: Humble's Wiltbanks 1, 660 ft s 660 ft w of nwc H&TC 5, blk 14, in Georgetown Ry. sur No. 1, elev 1552 ft, Bend 5640 ft, abnd 5994 ft.

Montague County—Failure: H. F. Gibson et al's Boland 1, 640 ft nsl 766 ft wel, BS&F Ry. sur A-98, sec 1, abnd 4053 ft.

Wilbarger County — Failure: Texas Co.'s Main 1, 555 ft out nwc se ne H&TC 16, blk 8, granite wash 4460 ft, abnd 4725 ft.

Young County—Fish Creek Pool, New Pay: Ben E. Keith-C. D. Reimers-Goble & Moore's Wallace 1, 777 ft ewl 810 ft nsl of 302.2-ac tr, M. E. Criswell sur A-1772, Marble Falls 4104 ft, flow 834 bbls 43-gr, 2-in, sand 4107-08 ft.

TEXAS PANHANDLE

Carson County: Skelly's Schafer 169, 1320 ft nsl and 440 ft wel sw I&GN 196, blk 3, pump 106 bbls, shot 562 qts, 3050-3155 ft.

Gray County: Magnolia's Darsey 3, 990 ft snl and 2970 ft ewl ACH&B 26, blk 1, elev

3053 ft, pump 85 bbls oil, 20 water, shot 310 qts 2950-3041 ft.

Texas Co.'s R. C. Mayberry 3, sw sw H&GN 11, blk A-6, pump 189 bbls, shot 400 qts 2745-2820 ft, td 2831 ft.

Hutchinson County: Skelly's Crosby-Hatcher 5, 4460 ft snl and 330 ft ewl TC Ry 3, blk M-24, pump 29 bbls oil, 92 water, acid 500 gals 3065-66 ft, td 3280 ft.

Panhandle Producing Co.'s Carver 2-B, Wm. Neil sur, junked 3159 ft.

Gray County: Cities Service's Wall 4-B, I&GN 162, blk 3, pump 100 bbls, shot 110 qts 3150-3225 ft.

Hagy-Harrington & Marsh's Burke 1, c nw se H&GN 207, blk B-2, flow 696 bbls, shot 248 qts 2850-2888 ft, td 2926 ft.

Phillips' Covey 1, se se nw H&GN 193, blk B-2, 14,800,000 gas, 383 lbs rp, acid 5000 gals 2894-2900 ft, td 3047 ft, pb 2900 ft.

Phillips' M. Davidson 6-A, H&GN 86, blk B-2, pump 70 bbls, lime 3120-64 ft.

Warner Oil Co.'s Taylor-Warner 1-A, 990 ft snl, 1650 ft ewl n½ sec 5, A. W. Wallace sur, abnd 3324 ft.

Potter County: U. S. Bureau of Mines' Bush 5-A, 640 ft snl, 1470 ft wel BS&F sec 25, blk 6, elev 3364 ft, gasser (helium and volume is restricted info), lime 3350-3550 ft.

TEXAS GULF COAST

Chambers County—Anahuac: Humble's Johnson 13, 471 ft fr sl sec 47, 961-ac tr, H&TC sur, 5½-in 7012 ft, flow 455 bbls, ¼-in, td 7024 ft.

Jefferson County—Clam Lake: Shell's McFaddin Trust 16, start ne cor H. Gentz sur, go s 1700 ft, th e 350 ft to lcn in T&NO sur 351, abnd 9020 ft.

Liberty County — Kirby: General Crude's Colby 1-A, 4907 ft fr el 660 ft fr nl 800-ac lse, abnd 9522 ft.

Matagorda County—North Markham: Ohio Oil Co.'s Cornelius 5, 1730 ft fr nl and 467 ft fr el 280-ac lse, I&GN sur 1, blk 9, 5½-in 8101 ft, perf 6966-70 ft, flow 505 bbls, 3/16-in, td 8133 ft.

OLD WELL DRILLED DEEPER

Liberty County—Hull: American Republic's Fee 125, 1860 ft fr el 1310 ft fr sl 800-ac lse, e flank, set 5-in 2764 ft, perf 2740-64 ft, pumped 144 bbls, td 2764 ft.

TEXAS GULF COAST WILDCATS

Brazos County—Failure: J. Elmer Thomas' Milo Heirs 1, 2½ mi ne Millican townsite, 467 ft fr s&el 600-ac lse, A. Millican sur, abnd 4813 ft.

San Jacinto County—Failure: Navarro Oil Co.'s Roberts 1, 260-ac tr, 3 mi sw Shepherd, abnd 9257 ft.

LOWER TEXAS GULF COAST

Bee County—South Caesar: G. W. Strake's Parker 1, 523 ft fr nwl 467 ft fr swl, Thomas Whittington sur, 100-ac lse, perf 6523-27 ft, flow 96 bbls, 3/32-in, td 6550 ft.

Goliad County — Slick: Transwestern Oil Co.'s Riedel 1, 500 ft fr swl 600 ft fr sel, W. C. Brown sur, perf 7593-98 ft, flow 188 bbls, ⅛-in, td 7611 ft.

Jackson County—West Ranch: Humble's Toney 15, 467 ft ne fr Menefee Bayou 1120 ft nw fr Lavaca river, 386-ac lse, perf 5546-56 ft, flow 149 bbls, ¼-in, td 5717 ft.

Magnolia's West Ranch 253-A, 6160 ft fr swl 11,582-ac lse, R. Musquez Gr, perf 4976-5025 ft, flow est 3 bbls condensate, 3,000,000 gas, ¼-in, td 5060 ft.

Karnes County—Porter: Transwestern's Porter 2, 1296 ft fr se'ly nwl 625 ft fr sw'ly swl 600-ac lse, abnd 4106 ft.

Kleberg County—Seeligson: Humble's King Ranch-Cabeza 21, 660 ft fr wl 162 ft fr nl, GH&H sur 49, 6420-ac lse, perf 5185-95 ft, flow 77 bbls, ⅛-in, td 6150 ft.

San Patricio County—Midway: Texas Conservative Oil Co.'s Crites 1, 467 ft fr nw&swl 172-ac lse, e flank, SA&MG RR sur, perf 5330-40 ft, flow 130 bbls, 9/64-in, td 5370 ft.

LOWER TEXAS COAST NEW PAY

DeWitt County — Norheim: Tide Water's Huck 1, 1390 ft fr nwl 660 ft fr el 400-ac lse, William Montgomery sur, perf 8108-24 ft, flow gas-condensate, opens new pay, td 8385 ft.

LOWER TEXAS COAST WILDCATS

Jim Wells County—Failure: Texas Gulf Producing's Miller 1, 333 ft fr nw 1295 ft fr nel se 220-ac of 320-ac, Casa Blanca Gr, abnd 6014 ft.

Live Oak County — Failure: Henderson's Coquat's Kerbey 1, 7 mi ne Oakville, 1061-ac tr, T. B. Reese sur, abnd 8029 ft.

SOUTHWEST TEXAS

Duval County—Bridwell: Forest Development Corp.'s Rogers 6, 665 ft fr wl 1650 ft fr sl 319-ac tr, J. Poitevent sur, perf 4306-10 ft, flow 169 bbls, 11/64-in, td 4314 ft.

Duval County—Cadena: Taylor Refining Co.'s Garcia 4-B, 1585 ft fr nl 3810 ft fr el, Blackstone - Hardeman sur, jetted 68 bbls, ⅜-in, td 4562 ft.

Duval County — Sejita: R. C. Lipscomb's Garcia 1-A, 4173 ft fr el 467 ft fr sl 400-ac tr, San Pedro de Charco Redondo Gr, w flank, perf 5830-35 ft, flow 142 bbls, ⅛-in, td 5881 ft.

Trinity Gas Corp.'s Alliance Trust 1, 467 ft fr sl 1100 ft fr el s 60-ac blk 2, sec 27 Realitos subdvn, San Pedro de Charco Redondo Gr, dual completion, perf 5714-22 ft, 5738-46 ft, flow gas and distillate; perf 5789-5800 ft, flow 130 bbls, ⅛-in, td 5803 ft.

Jim Hogg County—Armstrong: Humble's

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Starr County—Lockhart: Sun's McLean 5, 550 ft fr el 1252-ac tr, porc 79 and 80, 2056 ft n of tr, perf 3816-32 ft, flow 24 bbls, ¼-in, td 3836 ft.

Starr County—North Sun: Phillips' Alvarez 1, 467 ft fr w'ly n&wl 94-ac lse, Santa Theresa gr, abnd 4606 ft.

Starr County — Ross: W. L. Goldston's Mayorga 1, 500 ft fr n&wl share 35-A, J. S. de la Garza porc, 146-ac lse, perf 2516-24 ft, flow 94 bbls, ¼-in, td 2559 ft.

SOUTHWEST TEXAS WILDCAT

Webb County — Failure: Holland Oil and Frank J. Gravis' Laubscher 1, 660 ft fr sw&sel 6400-ac lse, Joaquin Galan Gr, abnd 5008 ft.

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SHREVEPORT, LOUISIANA

United States Wildcat Starts

CALIFORNIA

Kern County: Capital Co.'s Tupman 1, se sw se 24-30-24, Elk Hills area, lcn.

Los Angeles County: Haws & Ellsworth's 1, sw sw se 8-3-16, Towsley Canyon area, lcn.

Barnsdall Oil Co.'s Sunny Hills 1, sw nw nw 22-3-10, East Coyote area, lcn.

San Joaquin County: Amerada Petroleum Corp.'s Blossom Comm. 1, ne ne ne 32-5-5, Thornton area, mim.

ILLINOIS

Franklin County: N. V. Duncan's Franklin County Coal Co. 1, nw nw sw 5-5s-3e, lcn.

Union County: Nation Oil Co.'s Gray 1, se nw se 2-11s-1e, lcn.

Wabash County: Continental's Reisinger 1, sw ne ne 4-2s-13w, lcn.

Wayne County: B. M. Heath's Felix Heirs 1, se se 2-2s-6e, lcn.

H. Raman's Richison Cons. 1, n/2 se sw 13-1n-6e, dr.

INDIANA

Adams County: E. M. Culver, Tr.'s J. F. Swartz 1, nw ne sw 23-26n-13e, lcn.

Martin County: M. B. Brewer's John O'Neal 1, c nw sw 29-3n-4w, lcn.

KANSAS

Barber County: Champlin's Stumph 1, "OWCO", sw ne sw 24-32s-15w, CO to 5050 ft, Viola test.

C. M. Coats et al's Hull Estate 1, c ne ne 3-33s-14w, bldg dk.

Butler County: Masa & Wixon's Edmondson 1, se sw 32-25s-4e, mim.

Graham County: Bridgeport Oil Co.'s Balthazor 1, nw se se 34-8s-21w, lcn.

Leavenworth County: Huisman et al's Bachelor 1, se se se 27-10s-21e, rum.

McPherson County: Nelson Drlg. Co.'s Messinger 1, nw nw nw 5-18s-1w, dr 1450 ft.

Reno County: Kingwood & Alpine's Kuhns 1, ne ne ne 22-24s-7w, mim.

Frank Weimer & Meinshall's Tonn 1, se ne ne 21-25s-4w, dr 1230 ft.

Rooks County: Harbor Drlg. Co.'s Federal Farm Mortgage 1, sw se sw 8-10s-17w, dk.

Champlin's Marcotte 1, se ne sw 15-10s-20w, mim.

Russell County: Bell Oil & Gas Co.'s Gross 1, se ne 33-12s-13w, rur.

Isern Bros.' Whitt 1, ne nw 11-14s-12w, dr 1460 ft.

Sedgwick County: Paul Eckland's Stitt 1, sw se ne 21-27s-1w, rum.

Beech Aircraft's Streiff 1, ne se nw 3-28s-2e, lcn.

KENTUCKY

Allatin County: Gulf's George Brown 1, sw ne ne 7-V-74, dr.

Daviess County: Vickers & Slaughter's V. R. Konsler 1, ne ne 20-N-29, lcn.

Ohio & Basin Drlg.'s St. Raphael's Church 1, se sw sw 15-O-28, lcn.

Ohio County: Sohio's Everly Hughart 1, nw nw nw 13-L-29, dr.

Sohio's George Boder 1 (3) se se se 10-N-33, lcn.

Pendleton County: Gulf's R. Logan 1, se se sw 21-W-74, dr.

SOUTH LOUISIANA

Cameron Parish: Continental's State-Calcasieu Lake 1, Calcasieu Lake Dome area, 6995 ft w 456 ft s of ne cor 1-14s-9w, lcn 9500-ft test.

Vermilion Parish: Texas Co.'s Statel-340, n 19° Os mins w 20,215 ft fr USCGS station "Muddy" in Vermilion Bay, lcn 11,000-ft test.

MICHIGAN

Allegan County: Muskegon Dev. Co.'s Wilcox 1, sw sw ne 20-3n-13w, lcn.

Clare County: Union Drilling & Prod. Co.'s Hull 1, s½ sw sw 6-17n-5w, lcn.

Clinton County: Bennight & McCutcheons' Brown 1, sw sw sw 17-6n-2w, dk.

Genesee County: John F. Burton's Mulligan 1, ne nw sw 25-9n-8e, lcn.

Isabella County: Cities Service's Methner 1, se sw nw 33-16n-3w, lcn.

Mecosta County: Gordon and Chapman Oil Co.'s Soule 1, sw sw ne 12-15n-8w, dr.

Osceola County: C. L. Maguire-H. H. Coffields' Hibma 1, s½ nw ne 2-20n-8w, dr.

Sanilac County: J. W. Spencer's McDonald 1, nw nw sw 22-12n-16e, lcn.

NEW MEXICO

De Baca County: M. Staniforth et al's State 1, 3300 ft wel 1650 ft snl 27-4n-23e, lcn.

Lea County: Gordon M. Cone et al's State-Berry (Superior) 1-A, 1980 ft nsl 2080 ft ewl 30-18s-37e, 100 ft e of 810-ft jkd test, lcn.

OKLAHOMA

Comanche County: Burk-Greis' Hamilton 2, sw ne sw 33-4n-9e, dr 3000 ft.

Garvin County: W. L. Wolf's Box 1, se ne ne 34-1n-1w, machine spud.

J. Garfield Buell's Eldridge 1, se nw ne 26-3n-2e, lcn 4000 ft test.

Grady County: Skelly's Godwin Comm. 1, c se nw 8-5n-8e, lcn 8000 ft test.

Varco Oil Co.'s Harjo 1, sw se 24-6n-6e, dr 1568 ft.

Mid-Continent's Griswald 1, se nw se 5-9n-8e, rig.

Kay County: Amerada's Newkirk 1, se se nw 10-26n-2w, lcn.

Okfuskee County: Northern Ordnance's Curry 1, se se se 17-12n-8e, dr 2010 ft.

Osage County: Mealy-Wolf's Turner 1, nw sw sw 32-23n-6e, rur.

Payne County: Skelly's Anna Reed 1, se se nw 27-19n-5e, dr 2786 ft.

Pottawatomie County: Stanolind O & G et al's Bell 1, se se sw 21-11n-2e, mit.

NORTH TEXAS

Archer County: S. F. Hutcherson et al's Karl Linderman 1, 1000 ft out swc sec 41, blk 4, Clark-Plumb sur, lcn 1050-ft test.

H. I. Stine et al's R. O. Prideaux 1, 550 ft snl and 200 ft ewl ne BBB&C 2, lcn 850-ft test.

Cooke County: Jim Anderson et al's W. P. Austin 1, 330 ft out swc 56-ac tr, A. C. Bailey sur, A44, lcn 6000-ft test.

Bridwell Oil Co.'s Campbell Bros. 1-A, 2776 ft nsl and 660 ft wel O. F. Leverett sur A607, lcn 2000-ft test.

F. C. Blagg et al's Rosson 1, 234 ft nsl and 1648 ft wel BBB&C 19, lcn 2000-ft test.

Northern Ordnance, Inc.'s L. R. Haney 1, 330 ft wel and 330 ft snl (railroad) of 76-ac tract, Guadalupe de los Santos sur, A894, lcn 6000-ft test.

Sinclair Prairie's Montgomery 1, 330 ft ewl and 2000 ft nsl of Robt. Finney sur, A389, lcn 6000-ft test.

Jack County: C. F. Peffley et al's G. A. Biggers 1, 660 ft nsl and 1980 ft wel of J. W. Blankenship sur, A1447, lcn 3500-ft test.

Wilbarger County: W. T. Rogers, Jr., et al's Waggoner Est. 2, 750 ft snl and 2300 ft wel H&TC 40, blk 4, lcn.

EAST TEXAS

Anderson County: Pete Wiggins-Ed Hyde and Continental's Landis 1, 330 ft fr ne 330 ft nw of sel of s½, S. Landis sur, 2 mi n Bradford, sp on Woodbine test.

Navarro County: Dick Andrade and Northern Ordnance's Cunningham 1, 200 ft fr ne 3600 ft fr nwl, Francisco Procella sur, 4 mi sw Kerens, lcn 4000-ft test.

Upshur County: Bobby Manziel et al's P. D. Reynolds 1, 1980 ft nsl 660 ft ewl of 220-ac tr, Chas. O'Neal sur, se of Bug Sandy, lcn 5500-ft Paluxy test.

Wood County: W. A. Moncrief et al's R. L. Simmons 1, 1200 ft ewl 467 ft snl of 75-ac tr, Helena Nelson sur, mile ne Golden, rur for Paluxy test.

TEXAS GULF COAST

Colorado County: Great Lakes Carbon Corp.'s Brownson 1-C, West Garwood, 356-ac tr, Asa McClure sur, lcn 6100-ft test.

Tyler County: Humble's Goolsbee 1-C, Warren area, 100-ac tr, J. B. Flieller sur, A-903, lcn 8500-ft test.

Waller County: Jack W. Frazier & Victor Prassel's Hempstead Townsite Unit 1, lcn 5000-ft test.

LOWER TEXAS COAST

Jim Wells County: Atlantic's Bishop 1, 460-ac lse, A. de la Garza Gr, 2 mi w Bentonville, lcn 5800-ft test.

Nueces County: Sun's Rewalt 1, 257-ac lse, sh 5, Gregorio Farias Gr, lcn 7500-ft test.

Victoria County: H. J. Porter and H. R. Cullen's Petty 1, 4620 ft fr ne 1980 ft fr nwl 965-ac tr, Allen Talbot sur, ru 6250-ft test.

SOUTHWEST TEXAS

LaSalle County: Charles E. Fraser's Reed 1, 160-ac lse, H&GN sur 159, lcn.

SOUTH CENTRAL TEXAS

Travis County: J. E. Schultz' Hibbs 1, 337-ac tr, Amos Alexander sur, lcn 1200-ft test.

Williamson County: Fritz Fuchs' Fee 1, 50-ac tr, W. Candwright sur, lcn.

Fritz Fuchs' Fee 2, 331 ft fr s 330 ft fr el 50-ac lse, W. Candwright sur, lcn.

Wilson County: Stanolind's Rotter 1, 121-ac tr, Luis Manchaca Gr, 1½ mi n of Port, slim hole test, lcn.

WEST TEXAS

Andrews County: Signal O&G Co.'s M. M. Fisher 1, c sw sw PSL 25, blk A-35, lcn 5500-ft test.

Dawson County: National Ref. Co.'s E. W. Cope-Darby 1, c nw nw T&P 20, blk 36, T-4-N, lcn 5500-ft test.

WEST CENTRAL TEXAS

Coleman County: Auto Ordnance, Inc-Sohio Producing Co.'s J. P. Morris 1, 467 ft out nwc 320-ac tr, W. B. Roddan sur 4, rur for 3800-ft test.

Northern Ordnance Corp.'s L. S. West 1, 1320 ft nsl and 330 ft wel ½ BBB&C 36, dr 1510 ft.

Jones County: Algord Oil Co.'s M. R. Sealy 1, 330 ft out nwc 60-ac tr, J. M. Long sur 3, lcn 4000-ft test.

Texas Co.'s B. D. Rogers 1, 660 ft out swc Minton Northington sur 270, mim for Ellenburger test.

Squeaks from the Bull Wheel

Wartime Salesmanship

Notice to Customers:

Due to my independent position as a salesman, I have decided to show my lines at a time best suited to my own convenience.

At the present time, it pleases me to permit you to view merchandise only on Tuesdays and Wednesdays between the hours of 2:00 and 4:00 p.m. This will allow me to start and extend my weekends without interruption, and also permits me to devote my mornings to rest and recreation.

Note: The above applies only as long as the war produces a scarcity of materials. After the war, I'll be around with my tongue hanging out, and loose at both ends, as usual.

Hero Delayed

John Q. Buck, private first class invalided home from the Solomons, wired his parents that as complications had developed he was unable to leave the hospital and plans to celebrate his homecoming should be postponed.

"Complications?" Private Buck told a friend over the long distance phone. "You're telling me! The day nurse caught me kissing the night nurse."

Speaking the Language

When Marines landed somewhere in the South Pacific, the local school teacher thought it was a wonderful chance for her pupils to improve their spoken English. She sent them to visit the Marine camp with instructions to pay close attention to American speeches and manners.

The next morning, a lad of eleven strode into English class and greeted the startled schoolmarm with:

"Hi-ya babe; what's cookin'?"

Good Points

"I've been asked for a reference for our last maid, and I don't know exactly what to say. If I told the truth, I'd say she was lazy, unpunctual, and impertinent. Can you think of anything favorable we could possibly say?"

"You might say she's got a good appetite and sleeps well."

Be 100%

with your

10%

★

Buy WAR BONDS

Beats the Movies

"It is said that clergymen and soldiers appeal most strongly to women."

"By Jove! I wish I were an army chaplain."

Chances

One Negro was worrying about the chance of his being drafted for the Army. The other consoled him. "There is two things can happen, boy. You is either drafted or you ain't drafted. If you ain't, you can forget it; and if you is, you still got two chances. You may be sent to the front and you may not. If you go to the front you still got two chances; you may get shot and you may not. If you get shot you still have two chances; you may die and you may not. And even if you die, you still has two chances."

More Enlightenment

"I'm sorry, but I can't cure your husband of talking in his sleep."

"Well, then, could you make him talk more distinctly?"

And Points

"I'd like a dollar dinner, please."

"Yes, sir. On white or rye, sir?"

Now Be Honest

First Rousty: "A woman's greatest attraction is her hair."

Second Rousty: "I say her eyes."

Third Rousty: "I'd say her smile."

Fourth Rousty: "What's the use of sitting here lying to each other."

Wise Move

"Now that I'm going to marry Alice, there's one thing I would like to get off my chest."

"What's that?"

"A tattooed heart with the name Anne on it."—Scholastic.

Safe Secret

"Can you keep a secret?"

"Sure."

"I need to borrow some money."

"Don't worry. It's just as if I never heard it."

And Becoming More Common

"Willie, define the word puncture."

"A puncture is a litle hole in a tire, found a great distance from a garage."

In London Raid Shelter

"Is there a macintosh in here that's large enough to keep two young ladies warm?"

"No, but there's a MacPherson who's willing to try."

Same to You

A general and a colonel were walking down the street. Each time the colonel saluted a private he would mutter, "The same to you."

The general asked "Why do you always say that?"

"I was once a private and I know what they are thinking."

Not Arithmetic

"If you have $10 in one pocket and $15 in the other, what have you?"

"I have on somebody else's pants."

UNIBOLT

"BIG INCH"

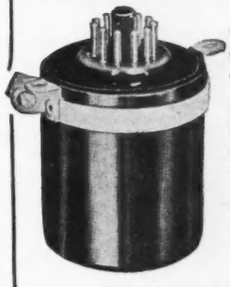
COUPLINGS

Are more widely used on pump suctions than any other connection. There must be a reason!

UNIBOLT
THE ONE BOLT COUPLING

THORNHILL-CRAVER COMPANY
HOUSTON

GEOPHYSICAL
TRANSFORMERS



sealed against Sub tropical humidity—"Sextuplex shielding," improved uniformity, minimum size and weight, *plug-in terminal block.

Also available with terminal lugs.

GEOPHONE CABLE

Full line of Geophysical electronic supplies.

HARRISON EQUIPMENT COMPANY
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HOUSTON ★ TEXAS

ELECTRONIC ★ OIL EXPLORATION ★ SUPPLIES

SALES ENGINEER

WANTED

An exceptional opportunity is available with sound company in business over twenty-five years to handle field engineering and sales covering oil field equipment manufacturers in Southwest and Pacific Coast territories.

Mechanical experience and engineering background required. This is a permanent position offering good starting salary with opportunity for substantial increased remuneration.

Replies will be held in strict confidence. State qualifications, age, draft status, salary required and where you can be contacted during next month.

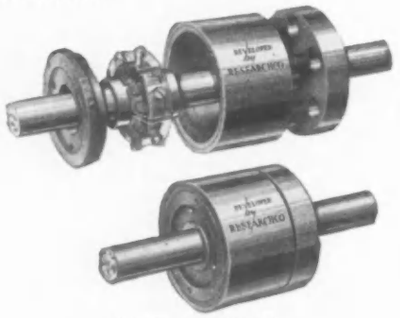
Address Box 206
c/o The Oil Weekly, Houston, Texas

Notes for the Equipment Buyer and User

Centrifugal Clutch

AMALGAMATED ENGINEERING & RESEARCH CORPORATION

Amalgamated Engineering & Research Corporation, Chicago, announces "Torkontrol," a new type of automatically engaging and self-disengaging centrifugal clutch. Produced in an unlimited range of sizes and capacities, this clutch can serve either as a coupling between shafts or as a driving pulley or gear in a transmission, as well as a starting cushion between power units and driven mechanism.



"Torkontrol" Clutch

The unit consists of a partially filled oil chamber fitted with a freely rotating hub which carries a series of movable wedge shaped fly-weights. As the hub revolves these weights fly outwardly and engage the internal rims of the outer case, binding the hub and shell into a functionally solid pulley or coupling.

Since the unit works equally well in either direction, it is reversible, and is set to engage or release at a given speed, and to slip in case of over-load.

Features of the unit, according to the manufacturer, are that its use permits smaller engines or motors which start without load, gives smooth cushioned application of power, straight-line acceleration, with resulting reduction in operating cost. Because the clutch combines features of both lubricated and centrifugal clutches, because it can be made in all sizes and can be operated horizontally or vertically, is set to engage and release at any predetermined speed, it has applications wherever power is transmitted through shafts, as a complete or integral unit.

These clutches have been built in sizes ranging from ¼ to 500 horsepower.

Portable Extinguisher

RANDOLPH LABORATORIES

Randolph Laboratories Incorporated, 8 East Kinzie Street, Chicago, Illinois, has developed a portable, light-weight fire extinguisher that requires only one hand in operation.

This model FF-4 features a self-aimed, fixed discharge horn and a thumb operated trigger valve that releases a blanket of carbon dioxide.

In use, the operator of the extinguisher, grasps the arched-steel handle as though aiming a .45 revolver, while the thumb presses the trigger directly above. The fire-resistant horn is permanently regulated to fixed firing position.

This type fire extinguisher is well adapted for small "spot" fires because of its portability.

Floor Cleaner

FIDELITY CHEMICALS CORPORATION

Fidelity Chemical Products Corporation, 430 Riverside Avenue, Newark, New Jersey, is marketing a new oil and grease absorbent floor cleaner. The product is listed by Underwriters' Laboratories as a class 1 non-combustible absorbent for reducing fire and slipping hazards and for cleaning floors.

Though granular in form, the material is non-abrasive and will not damage machinery or working parts due to abrasive action. It is also odorless, non-poisonous, and non-injurious to skin, clothing, or flooring, according to the manufacturer. It may readily be spread by hand and used on any type of floor surface.

Hunt Tool Company to Handle Edwards Wire Rope

E. H. Edwards Company has appointed Hunt Tool Company exclusive oil field distributor in the Gulf Coast area for Edwards wire rope, stocks to be available from the company's Houston, Bay City, Corpus Christi, Jennings and Harvey shops.

Cooper-Bessemer Opens Third Pacific Coast Office

The Cooper-Bessemer Corporation announces opening of an additional Pacific Coast factory branch office, at 401 Rust Building, San Francisco, California. This is the third Cooper-Bessemer office on the West Coast, and John G. McKissick will be in charge.

Electric Trucks

The Yale & Towne Manufacturing Company, Philadelphia, has published a 76-page catalog to acquaint industry with its war-standardized line of electric industrial trucks. The booklet contains detailed descriptions of the models which have been reduced to a few basic types. It also has a number of application illustrations. A separate section is devoted to the workings of the WPB's Limitation Order L-112, as applied to Yale Industrial Trucks.

Electrical Conservation

Westinghouse Electric and Manufacturing Company, East Pittsburgh, Pennsylvania, has published a 96-page booklet on "Wartime Conservation," containing recommendations by Westinghouse engineers for selecting, applying and using electrical equipment so as to achieve the best possible output with the greatest saving in critical materials.

The book covers up-rating of motors, thermal temperature loading of transformers, industrial network systems, line equipment and materials; and gives tips on saving and salvaging materials as practiced in the various Westinghouse plants.

In addition to pointing out ways of saving vital materials in new equipment purchased, the booklet gives many examples of how existing equipment can be made to give better service and greater output by up-rating or rebuilding with more efficient materials than originally used.

Simplified Valve Recommendation

A proposed simplified practice recommendation for iron and steel pop safety valves has been submitted to producers, distributors, users, and others interested for approval or comment, according to an announcement by the Division of Simplified Practice, National Bureau of Standards. The proposed recommendation includes iron body, carbon steel body, and alloy steel body pop safety valves, intended primarily for land steam service.

The simplified list will satisfy 95 percent of the requirements for these valves, considering models, inlet sizes, outlet sizes, connections. The variety will be reduced from approximately 3,000 to 200.

Mimeographed copies of the proposed simplified practice recommendation may be obtained upon request to the Division of Simplified Practice, National Bureau of Standards, U. S. Department of Commerce, Washington, D. C.

E. G. PLOWMAN has been appointed vice president in charge of traffic for United States Steel Corporation, a newly created position. He will have headquarters in Dallas. Plowman has been traffic manager of Colorado Fuel and Iron Company since 1937. He graduated from Dartmouth College in 1921, and received a Ph.D. from the University of Chicago in 1937. Prior to his association with Colorado Fuel and Iron Company, he taught economics at Massachusetts Institute of Technology and Boston University. He became industrial secretary of Associated Industries of Massachusetts and was concurrently on the staff of Babson Institute. Subsequently he became professor of business management of the University of Denver and has occupied various industrial positions in Denver.

J. A. CONNELLY has been appointed vice president and general manager of Petroleum Iron Works Division of the United States Steel Products Company, Dallas, Texas. William I. Hanrahan was appointed vice president.

J. A. Connelly

W. I. Hanrahan

people with a PUNCH!

INSTALLMENT TWO*

A Reserve Guard platoon demonstrates a "Spear-head Wedge" formation used in crowd control

{below} Reserve Guardettes show their proficiency at semaphore drill . . . a useful means of emergency communication

A year ago we first told the story of Beechcraft employees. We told of their spirit of personal sacrifice and extra contribution to the war effort. Here is that story's continuation.

The production records of which they were so justifiably proud a year ago have been shattered. Voluntary investments in War Bonds have been increased to more than 22% of our total gross payroll. Hundreds of Beechcrafters with a supercharge of enthusiasm and energy and loyalty have maintained the ranks of the Beechcraft Reserve Guard, some of whom are shown in these pictures of their Second Annual Review. These men and women voluntarily drill and practice in their free time so that they may be ready to cope with any catastrophe or emergency that may arise, whether caused by fire, sabotage, or act of God. They have sworn to protect life, war material, and the plant, in the interest of the war effort. They come from all departments of the Beechcraft organization, serve without pay, and buy their own uniforms.

It's a grim slogan that these *people with a punch* have adopted. But war is a grim business. And their record proves that they mean it when they say,

"LET'S KILL 'EM WITH PRODUCTION"

**to be continued until Victory*

Beech Aircraft

CORPORATION

BEECHCRAFTS ARE DOING THEIR PART — *WICHITA, KANSAS, U. S. A.*

PREFERRED

For Simple, Safe and Certain Removal and Prevention of Boiler Scale and Corrosion

SAND-BANUM

"The Entirely Different Boiler and Engine Treatment"

Clean Boilers and Tubes Generate *MORE POWER* Constantly. Sand-Banum makes them clean and keeps them clean.

Write today for data on the preferred way of consistent conservation. Let this colloidal compound of all active ingredients aid you in maintained capacity operations with less time out for shut-downs and avoidance of water analyses and mechanical cleanings.

AMERICAN SAND-BANUM COMPANY, Inc.

9 Rockefeller Plaza, New York City 20

"Now, if we were only staying at THE ROOSEVELT"

When you stop at The Roosevelt you don't risk getting marooned like this. For you'll be within walking range of Manhattan's Midtown activities. Direct passageway from Grand Central Terminal to hotel lobby. A reservation at The Roosevelt liquidates a lot of bother. *Rooms with bath from $4.50.*

THE ROOSEVELT

Robert P. Williford, General Manager

MADISON AVE. AT 45th ST., NEW YORK

—A Hilton Hotel—

OTHER HILTON HOTELS FROM COAST TO COAST:

TEXAS, Abilene, El Paso, Longview, Lubbock, Plainview; NEW MEXICO, Albuquerque; CALIFORNIA, Long Beach, Los Angeles, *The Town House*; MEXICO, Chihuahua, *The Palacio Hilton*. Hilton Hotels. C. N. Hilton, President.

Men in the Industry's News

TED M. CADY, who has been in charge of Kansas operations of Texon Oil & Land Company and affiliated companies since January, 1940, has been transferred from Wichita to Fort Worth as manager of exploration and exploitation activities of the group with offices in the Fair building. The Texon Interests have substantial production in Kansas and West Texas, and the opening of the Fort Worth office will be followed by increased activity in the latter district. Cady was with Empire Gas & Fuel Company in Texas before serving in the Army during World War I, then worked in the land department of White Eagle Oil & Refining Company in Kansas and Texas Panhandle until the latter was merged with Socony-Vacuum Oil Company. He joined Continental Oil Company in 1937, serving at Wichita and later as district land man for Illinois and Indiana. He was placed in charge of the Texon Interests' Wichita office in January, 1940.

GAIL F. MOULTON has joined the Department of Petroleum Economics of The Chase National Bank of New York to be in charge of the department's geological work. He has recently been engaged in oil producing operations and consulting work at Lawrenceville, Illinois. After leaving Illinois Geological Survey nearly 15 years ago to go into commercial work, Moulton served as maanger of the geological department of the United Gas Company at Houston. He left Houston to become staff geologist in New York for the Electric Bond and Share Company in 1931. From 1937 to 1940 he was in charge of the New York office of Ralph E. Davis and made his headquarters in New York area until he moved to Illinois in 1941.

M. M. KORNFELD has been employed by Midstates Oil Corporation as district geologist in its Houston office. He replaces Allen Williams who has resigned to become associated with independent operators at Houston.

A. B. WEISS, production foreman for the Pure Oil Company, Cumberland field, southern Oklahoma, has been moved to Pauls Valley in a similar capacity.

HARVE WATSON, formerly an independent operator in Oklahoma, has accepted a post with Phillips Petroleum Company in the Midland, Texas, land office.

FRED E. COOPER addressed Tulsa Geological Society November 16 on his experiences in Mexico.

MAX W. BALL, organizer and former president of Abasand Oils, Ltd., is moving his headquarters from Edmonton to the First National Bank Building, in Denver, Colorado, where he has maintained an office as consulting petroleum engineer since 1928. He will continue to act as consulting engineer for the Abasand Company which is engaged in the development of Northern Alberta tar sands.

ERNEST ALLEN, JR., engineer, Phillips Petroleum Company at Kaw, Oklahoma, has been transferred to Blanket, Texas.

LLOYD L. JORDAN has been appointed

the Arkansas member of the Research and Coordinating Committee of the Interstate Oil Compact Commission; vice Alec M. Crowell, resigned. Crowell remains on the engineering committee. Jordan graduated from Ouachita College at Arkadelphia, Arkansas, in 1929 with a degree in mechanical engineering, and joined Sinclair Prairie Oil Company, natural gas and gasoline division. In 1933 he went with Lion Oil Refining Company at El Dorado. Early in 1939 he joined the Arkansas Oil and Gas Commission as natural gas engineer and was promoted to division engineer at Magnolia in 1942.

GEORGE HODGES has been placed in charge of a new land and geological office of Midstates Oil Corporation at 1432 Milam Building, San Antonio. Morris Cannan, geologist for the company at Alice, has been transferred to San Antonio, as district geologist.

C. A. WARNER, chairman of the Petroleum Division of American Institute of Mining Engineers, addressed the Southeastern Texas section of the American Chemical Society, November 19, at Houston, on "History and Development of the Oil Industry in Texas." A dinner honoring Warner was held prior to the meeting.

W. W. VANDEVEER, director in charge of PAW District 2, is in Tulsa discussing a proposal to discontinue the Tulsa materials office of PAW.

Advertisers' Index

*Indicates detailed information on products and services included in 1942 edition of Composite Catalog of Oil Field and Pipe-Line Equipment.

*American Iron & Machine Works Co. ..... IV Cover
*American Sand-Banum Co. 64
The American Well & Prospecting Co. 3
Wm. M. Barret, Inc. 60
Beech Aircraft Corp. 63
*Bethlehem Steel Co. 42
*Brown Oil Tools, Inc. 34
*Butler Manufacturing Co. 33
*Cameron Iron Works, Inc. 31
Chemical Compound Co. 34
*Columbian Steel Tank Co. 59
The First National Bank & Trust Co. 50
Ft. Worth Laboratories 60
Gulf Engineering Co. 34
Harrison Equipment Co. 61
Hercules Powder Co. 2
Hill & Hill 60
Houston Laboratories 60
*Hughes Tool Co. ..... I Cover
W. P. Jenny 60
Kerotest Manufacturing Co. 29
*Lane-Wells Company 27
*Mission Manufacturing Co. 35
The National Supply Co. 24-25
*Patterson-Ballagh Corp. 1
*Pelican Well Tool & Supply Co. 54
Roosevelt Hotel 64
*Standco Brake Lining Co. 60
Sun Oil Co. 50
Texas Electric Steel Casting Co. 21
The Thermoid Co. ..... III Cover
*Thornhill-Craver Co. 61
Warner & Swasey Co. 6
*J. H. Williams & Co. 41
Wilson Electrical Equipment Co. 57
*Wilson Manufacturing Co. ..... II Cover
The Youngstown Sheet & Tube Co. 4